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Design Guide

Swimming Pools

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A. Purpose of the Design Guide

This design guide provides information and criteria for the design of facilities that support the Air Force's swimming programs. The guide is intended to promote designs that are functional, economical, safe, and aesthetically pleasing. However, each design should satisfy the unique requirements of the particular base and at the same time be compatible with the local environmental and specific site conditions. An individual solution to the particular needs of the project is the primary objective of this guide. Included herein, are design considerations for both indoor and outdoor swimming facilities.

B. Scope of the Design Guide

This guide applies to new construction in the continental United States and overseas. Guide chapters contain the following categories of information.

1. Initial Planning

Chapter 2 includes project objectives, optional facility descriptions and programs, and factors for evaluating the selection of a proposed site.

2. Design Objectives

Chapter 3 lists the primary goals of the design and serves as a checklist for both designer and user in evaluating the proposed design.

3. General Design Criteria

Chapter 4 includes the basic project requirements for the design.

4. Specific Space Criteria

Chapter 5 includes descriptions, sizes, construction requirements and typical arrangements for each functional space that might be included in the facility.

5. Project Design

Chapter 6 includes basic philosophy, cost implications, spatial relationships, environmental influences, principles of organization, and sample design schemes to illustrate and encourage innovative design solutions.

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6. Appendices

Chapter 7 lists technical documents that establish detailed design standards. Information contained in these documents is not duplicated in this guide, except where specific applications of these standards are included in the planning and criteria chapters to clarify particular requirements that are important to basic design decisions.

C. Use of the Design Guide

This guide is intended primarily for use by the design agency for the project. However, the information included in this guide, in conjunction with other Air Force criteria and procedures, can also be used by the base programmer, MAJCOMS, and other parties in the preparation of planning documents for the construction funding program, such as DD Form 1391 and the Project Book.

D. Primary General Reference Documents

Specific reference documents that establish technical requirements for various aspects of the design are referenced in the chapters that follow. The documents listed below, however, provide the basic standards for the general description of the design.

- *DOD 4270.1-M, Construction Criteria Manual.*
- *AFM 86-2, Standard Facility Requirements.*
- *AFM 88-15, Air Force Design Manual Criteria and Standards for Air Force Construction.*
- *AFP 215-34, Morale, Welfare and Recreation Objectives.*
- *AFR 215-1, Morale, Welfare, and Recreation (MWR) Programs and Activities.*
- *AFR 215-22, Air Force Sports Program Guide.*

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A. Objectives of the Project

The project is intended to result in a facility that supports the Air Force mission as described in *AFR 215-1*, and that provides and promotes the specific MWR programs and activities as described in *AFR 215-22* and *AFR 215-24*. These facilities are intended to provide a wide variety of swimming activities allowing maximum user participation and promoting physical fitness and health. The facility shall offer swimming programs that satisfy the leisure time needs and interests of Air Force personnel and their families with an optional provision for spectator entertainment. The programs to be considered include open swimming, diving, wading, sunbathing, lap swimming, swimming instruction, water safety instruction, life saving instruction, competitive swimming and diving, aquatic events involving spectators, aquatic instruction (canoeing, kayaking and scuba), pilot training for parachute landing in water, and pilot survival training.

B. Type of Facility

To support the objectives of the project, *AFM 86-2* describes two general types of facilities: an indoor pool and an outdoor pool.

1. Outdoor Pool Facilities

They include a 25 or 50 meter pool, bathhouse, public area, staff and support spaces.

2. Indoor Pool Facilities

They provide enclosed space for a 25 or 50 meter pool, locker room, showers, public area, staff and support functions. *AFM 86-2* permits one indoor pool facility for each base, however, this type of facility is only suggested at locations where:

- The outdoor temperature or precipitation prohibits outdoor swimming from June 1 to September 1.
- Off-season swimming facilities are necessary for various types of instruction and/or exercise of the military population.
- It is important to provide certain aquatic activities regardless of the weather.

C. Size of Facility

The overall size planned for the swimming pool and bathhouse shall not exceed the limits set in *AFM 86-2*. The overall size planned for the facility shall also be determined by the particular needs of the base, including the following factors:

- Size of military population in the area served by the base.
- Number of youth and children served by the base. These are normally the most frequent users of outdoor pools and associated activities.
- Availability of other pools on base and in the vicinity of the base.
- Anticipated need for pool use in training activities such as scuba and deep water survival.

Accepted industry standards for determining occupancy of the pool and the proportional size of supporting components are as follows:

- Main Pool with water 5'-0" (1.5 m) deep or less: 15 ft.² (1.4 m²) per bather.
- Diving Area: 25 ft.² (2.3 m²) per bather.
- Bathhouse: sized to accommodate 20% of pool population, 10-15 ft.² (.9 to 1.4 m²) dressing area per person, and lockers or baskets to meet 100% of pool peak capacity.

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D. Program of Spaces

The selection of both interior and exterior spaces to be included shall satisfy the particular needs and policies of the base, and comply with the overall size and budget limitations for the project. The following factors must be considered:

1. User Needs and Preferences

The specific type, number and size of spaces appropriate for the users will vary depending on the climate, location, and demography of the base. For example, if there is a high proportion of dependents on the base, the facility should provide a wading pool and play area for children. If there is a strong interest in competitive swimming or diving, the pool should be properly equipped for these functions.

2. Operating Policies

Selected programs and spaces for each facility may vary widely depending on the anticipated operating policies of the facility. As a result, it is important early in the planning process to determine preferred operating procedures on the following issues:

a. Types of Programs and Activities. The type of activities to be provided in the facility (intramural or varsity competition, instruction courses, recreational use, lap swimming or wading) should be analyzed to determine the scheduling and staffing requirements for each.

b. Storage of Clothes. The selected method of storing the user clothing may be the single most important factor influencing the design and operation of the bathhouse. There are two options available: a basket check-in system that is monitored by a staff member (i.e. the user collects a basket from a central point and returns it to a staff member for storage while swimming); or a locker or basket system that is handled without staff supervision (i.e. lockers or storage baskets are provided in the dressing room itself, and the clothes are secured by the owner). Each of these systems has a major impact on the circulation and staffing of the bathhouse.

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c. Visibility. A strict system of observation and control is crucial in a swimming pool facility. Surveillance of three activities is essential: checking in and out, storage of clothes (if handled by staff), and pool and deck activity. The first ensures entry by approved personnel only, the second will reduce opportunity for theft, and the third will ensure proper safety for those using the pool. The key to an efficient bathhouse design is to organize these surveillance requirements in a way that will minimize staff numbers and movement.

d. Checking In and Out Procedures. A system must be provided to supervise procedure for entry into the facility. Policies must be provided for the type of identification required and the method for checking on both.

e. Scheduling. After determining the programs to take place in the facility, a system of organizing them on a daily and seasonal basis should be developed. There are many programs (kayaking, learn to swim classes, lap swimming, special programs for handicapped training, etc.) which will interfere with general or free swim periods. Careful scheduling can allow a facility to greatly expand its potential program uses, as well as eliminate conflicts.

f. First Aid. In spite of the most careful planning and safety procedures, there is always the potential for an accident. Policies and facility planning must include access to the pool deck for ambulance or rescue vehicles.

g. Food Service. Policies on food service can vary from no food permitted, to vending machines, to a snack bar. Once the level of service is decided, an attitude must be determined relative to location, fenced or open access to the pool deck, trash removal, types of containers allowed (no glass should be allowed on the deck), etc.

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E. Area Requirements

Tables 2-1 and 2-2 list space compositions and areas for outdoor and indoor, 25 and 50 meter pools.

Table 2-1: Program of Spaces for Outdoor Pools

	Required or Optional	*25 Meter Pool Sizes* ft.²	m²	*50 Meter Pool Sizes* ft.²	m²
Pool and Deck Areas					
General Use Pool (6-8 lanes)	R	3698-4848	343.5-450.4	7396-9696	687.1—900.8
Diving Area	R	1024	95.1	1560	144.9
Wading Pool	O	100	9.3	150	13.9
Training Pool	O	600-800	55.7-74.3	800-1000	74.3-92.9
Deck	R	2-3 Times Pool Area		2-3 Times Pool Area	
Play Area	O	200-400	18.6-37.2	400-600	37.2-55.7
Grassed Sunbathing Area	O	No Requirement		No Requirement	
Bathhouse Spaces					
Check-in (w/basket storage)	R††	400—450	37.2—41.8	600—650	55.7—60.4
Check-in (w/o basket storage)	R††	50—100	4.6—9.3	100—200	9.3—18.6
Dressing Area (w/lockers)†	R††	500—900	46.5—83.6	825—1500	76.6—139.4
Dressing Area (w/o lockers)†	R††	450—675	41.8—62.7	750—1125	69.7—104.5
Shower Area†	R	300—500	27.9—46.5	500—700	46.5—65.0
Toilet Area†	R	200—300	18.6—27.9	500—700	46.5—65.0
Office	R	100—200	9.3—18.6	200—300	18.6—27.9
Equipment Storage Room	R	150—200	13.9—18.6	200—350	18.6—32.5
Concession Area	O	No Requirement		No Requirement	
Net Area		*Approx. 80% of Gr. Area*		*Approx. 80% of Gr. Area*	
Filter Room	R	300—400	27.9—37.2	400—600	37.2—55.7
Chemical Storage Room	R	30—50	2.8—4.6	50—100	4.6—9.3
Maintenance Storage	R	Sized for Equipment		Sized for Equipment	
Public Toilets	O	No Requirement		No Requirement	
Circulation	R	100—200	9.3—18.6	150—300	13.9—27.9
Walls and Structure	R	8-12% of Gross Area		8-12% of Gr. Area	
Gross Area		***Authorized Size or Less***		***Authorized Size or Less***	

†Area given is for one area only—two are specified (male and female) in every case.

††Choice of 2 dressing areas with lockers and check-in without baskets, or 2 dressing areas without lockers and check-in with baskets.

Note: The total area for public toilets, lobby, circulation, walls, structure, filter room, chemical storage, equipment storage and mechanical space shall not exceed 20% of the gross area.

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Table 2-2: Program of Spaces for Indoor Pools

	Required or Optional	25 Meter Pool Sizes ft.²	25 Meter Pool Sizes m²	50 Meter Pool Sizes ft.²	50 Meter Pool Sizes m²
Pool and Deck Areas					
General Use Pool (6-8 lanes)	R	3698-4848	343.5-450.4	7396-9696	687.1—900.8
Diving Area	O	1024	95.1	1560	144.9
Wading Pool	O	100	9.3	150	13.9
Training Pool	O	600-800	55.7-74.3	800-1000	74.3-92.9
Deck Area	R	.75-1.5 Times Pool Area		.75-1.5 Times Pool Area	
Bathhouse Spaces					
Check-in (w/basket storage)	R††	400—450	37.2—41.8	600—650	55.7—60.4
Check-in (w/o basket storage)	R††	50—100	4.6—9.3	50—100	4.6—9.3
Dressing Area (w/lockers)†	R††	500—900	46.5—83.6	825—1500	76.6—139.4
Dressing Area (w/o lockers)†	R††	450—675	41.8—62.7	750—1125	69.7—104.5
Shower Area†	R	300—500	27.9—46.5	500—700	46.5—65.0
Toilet Area†	R	200—300	18.6—27.9	400—600	37.2—55.7
Office	R	100—200	9.3—18.6	200—300	18.6—27.9
Equipment Storage Room	R	Sized for Equipment		Sized for Equipment	
Vending Area	O	No Requirement		No Requirement	
Lounge	O	300	27.9	400—500	37.2—46.5
Net Area		Approx. 80% of Gr. Area		Approx. 80% of Gr. Area	
Filter Room	R	300—400	27.9—37.2	400—600	37.2—55.7
Chemical Storage Room	R	30—50	2.8—4.6	50—100	4.6—9.3
Mechanical and Maintenance	R	3-5% of Gross Area		3-5% of Gross Area	
Public Toilets	O	No Requirement		No Requirement	
Lobby	R	2-4% of Gross Area		2-4% of Gross Area	
Circulation	R	100—200	9.3—18.6	150—300	13.9—27.9
Walls and Structure	R	8-12% of Gross Area		8-12% of Gr. Area	
Gross Area		Authorized Size or Less		Authorized Size or Less	

†Area given is for one area only—two are specified (male and female) in every case.

††Choice of 2 dressing areas with lockers and check-in without baskets, or 2 dressing areas without lockers and check-in with baskets.

Note: The total area for public toilets, lobby, circulation, walls, structure, filter room, chemical storage, equipment storage and mechanical space shall not exceed 20% of the gross area.

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E. Site Selection

The pool site should be selected to minimize or eliminate problems in design, construction cost, and pool function. The following criteria should be considered.

1. Site Size

The site shall be large enough to accommodate all the components of the facility, including those expected to be added in the future. These components include parking, pedestrian access, playing fields, and the swimming pool complex. In addition, the size of the site shall allow for open or landscaped spaces around these components for drives and walks, safe separation between activities, grading transitions between components, and required set backs from adjacent property. For initial planning purposes, the site size can be considered satisfactory if the area of the site is at least the sum of the following:

a. 400 ft.² (37.0 m²) for each parking space. The number of parking spaces shall total two for every ten pool users, and one for each full time staff member of the facility.

b. The area of the swimming pool.

c. The area of the deck.

d. The gross area of the bathhouse.

e. Area for playing fields, picnic table and landscaping, including a "buffer zone" around playing areas and the facility.

2. Site Considerations

Ideally, sites for swimming pools should meet the following criteria:

a. Where the need for pedestrian access is considerable, the site should be approached by sidewalks and should not require pedestrians, particularly children, to cross heavily traveled roadways.

b. The necessary utilities, water, sewerage and electricity, are readily available.

c. The topography is level enough for construction of the pool.

d. The soil is stable but free of rock which is costly to excavate.

e. The site is not close to heavy industrial smoke or other unpleasant or harmful air pollutants.

f. The site is near other recreational activities such as youth centers, clubs and athletic facilities.

g. Sites immediately adjacent to housing, hospitals, or other facilities which might be disturbed by recreational noise are not preferred. Similarly, sites in the area of frequent airplane traffic should be avoided.

h. The site should have good natural drainage.

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A. Architectural Character

The design shall express the recreational role the facility plays in the life of the community and should project a feeling of informality. Although there is no single mandatory style, the design shall respect the style, scale, and character of the surrounding area. If the bathhouse is to be immediately adjacent to other structures, careful consideration should be given to coordinating material selections, course lines, roof slopes, scale of windows, etc. Bathhouses which are removed from surrounding structures offer the opportunity for a more unique architectural form but should still be compatible with the overall styling and character of the base as well as the geographic region.

B. Surveillance

Bathhouse layout shall allow effective monitoring of the facility at all times with a limited staff. A prominent sign-in/sign-out counter shall be located near the main entrance. It shall be manned by one person and shall have unobstructed views of all entrances. The pool office shall have complete and unobstructed surveillance of the entire deck and pool area.

C. Zoning

The pool deck, associated pools, sunbathing areas and food service should be zoned for maintenance and safety. Tot play areas and wading pools should be segregated from the main pool by low fencing to ensure against wandering children. Training pools should also be separated by low fencing. If spectator seating is provided, it should be segregated by low fencing and provided with a separate entrance from an external pedestrian walkway system. Food service areas may or may not be fenced, but should be carefully designed to respect desired operating policies.

D. External Circulation

The external circulation system shall consist of an access road, vehicle drop-off, parking lot for staff and users, connections to on-site walkways, service drive with easy access to the chlorine room and filter building, and driveway and gate for ambulance access to the pool deck.

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E. Storage

There is an extensive amount of equipment required for the operation and safety of the pool. Storage areas must be carefully sized and designed not only to accommodate all the required equipment, but also to allow instant access to those items related to life saving procedures.

F. Durability and Maintenance

Interior surfaces, details, finishes, fixtures and fittings should be carefully selected for resistance to wear, impact and vandalism. Because of the high humidity associated with pools and showers, all materials selected shall be resistant to water and mildew.

G. Life Safety and Hygiene

The safety and hygiene of bathers shall be considered in every aspect of the development of the design. Floor and deck surfaces in wet areas should be slip resistant. Wall surfaces should be selected to minimize abrasions in case of accidents or stumbles by bathers.

H. Use by the Physically Handicapped

The facility will be designed to allow full use and access by the handicapped. *ANSI 117.1* code requirements will be met as a minimum standard. Special equipment (transfer benches, crane lifts, ramps into the pool, etc.) will not be required unless therapeutic training is envisioned in the development of the program.

I. Environmental Controls

The disposal of all chemically treated water shall be in compliance with local code requirements. Safe provisions shall be incorporated for the storage and handling of chlorine gas and other chemicals.

J. Sunlight and Glare Control

Outdoor pools require the following methods of sun control:

1. Lifeguard Chairs

They shall be located to minimize glare on the water (either from the sun or night lighting standards).

2. Shade Provisions

Shade or sun control must be available to staff members at the check-in area, the office, and guard chairs as well as be provided on or adjacent to the pool deck for optional relief for sunbathers.

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A. Site Work

The design shall comply with the standards listed in Table 7-1, as well as satisfy the following general criteria.

1. Layout and Drainage

The pool deck shall be configured and sloped so that water on the deck (either from pool overflow, splashing, rain or surface water runoff) is not allowed to flow into the pool. Deck drains shall be placed to minimize puddling on the deck.

2. Exterior Paving

Paths or walks leading into the pool area must be paved with concrete, asphalt, brick or other hard surface to eliminate "tracking" of loose materials onto the deck.

3. Landscaping

The use of deciduous trees should be minimized around an outdoor pool in order to ease deck and pool maintenance. They are acceptable in picnic or play areas but in no case should their drip line extend onto the pool deck proper. Evergreens and shrubs, on the other hand, can be beneficial as wind screens or visual barriers. Grass areas for sunbathing inside the pool complex are always appreciated by bathers but must be designed to minimize "tracking" of grass clippings into the pool.

4. Fencing

The pool complex shall be completely enclosed with a minimum 8'-0" (2.44 m) high fence. All gates or doors required must be lockable. Segregation of areas within the deck (wading pool, food service, spectators, etc.) should be accomplished with 2'-6" to 3'-0" (.76 to .91 m) high fencing.

B. Pool Structure

1. Size and Capacity

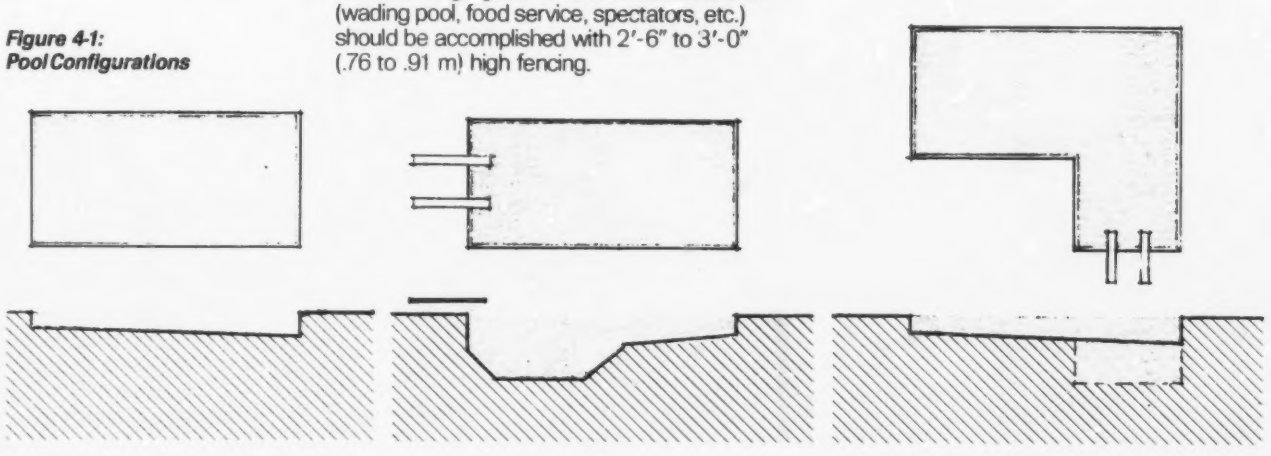
The maximum allowable pool size is determined by *AFM 86-2*. Given the water surface area, the safe capacity is determined by allowing 15 ft.² (1.4 m²) for each person at less than 5'-0" (1.5 m) depth, and 25 ft.² (2.3 m²) for each person at more than 5'-0" (1.5 m) depth.

2. Shape

The pool shape is determined by the length (which is given as 25 or 50 meters by *AFM 86-2*), the width (which is determined by the number of lanes to be included - 6 to 8 lanes are recommended) and the placement of the diving area. The recommended shape is a simple rectangle for free swimming, with diving "L" placed on either side of the deep end. If the depth of water in the rectangle is held to a maximum of 5'-0" (1.52 m), the "L" shaped plan will offer the largest capacity pool. Figure 4-1 shows three of the most common types of swimming pool configurations.

Diving may occur at the deep end of the rectangle but is only recommended where topographic conditions, the shape of the site, or an effort to minimize the area of enclosure in an indoor pool suggest deep end diving as the only means of holding the project within the budget. The shape of the training or wading pools is optional.

Figure 4-1:
Pool Configurations



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3. Construction

Of the many types of pools available, only four are recommended for Air Force use. They are poured concrete, gunite (sprayed concrete), a combination of gunite with a metal gutter system, and a metal (aluminum or stainless steel) pool. The four methods increase in durability (as well in cost) in the above order. Poured concrete and gunite pools require a plaster liner for the concrete — either marbledust plaster or other similar material. A metal pool needs no liner, but requires painting every few years. The normal lifespan of a concrete pool is between 15 and 25 years. Many aluminum pools have been in place for over 25 years and show no sign of need for replacement.

Considering budget and durability, a gunite pool with a metal gutter system is recommended for "normal" Air Force use. This type of pool is far cheaper than a metal pool and outlasts a concrete or gunite pool because the metal gutter system is placed at the point of maximum wear. This type provides not only an integral continuous overflow perimeter gutter system, but also, the majority of the pool's supply, return, and surge plumbing requirements. Only under the following circumstances is a metal pool recommended: where questionable soil conditions exist, in an area where extreme vandalism is prevalent, or where unusual structural and/or site conditions require a lightweight prefabricated structure.

4. Finishes

Gunite construction requires that the pool be lined with either a plaster liner (marbledust plaster or other similar material) or ceramic tile. Tile can also be used in conjunction with a plaster liner at the gutter area. A metal pool must be painted. Metal gutter systems (usually stainless steel with plastic accessories) require no finish. For visibility and easy maintenance, the pool color should be white or light blue. The color for depth markers and racing lane stripes should be contrasting. The pool coping or gutter system should also contrast (in color) with the deck itself.

5. Details

a. Depth markers are required at each 2'-0" (.61 m) increment (or less) of water depth, at maximum and minimum depths, at transitions between deep and shallow water, and at diving areas. Shallow pool areas less than 3'-0" (.91 m) shall be labelled "NO DIVING." The depth markers shall be located on the deck beside the pool edge. The figures shall be at least 4" (.10 m) high in a color that contrasts with the background.

b. Cup anchors or lifeline hooks shall be centered between racing lanes and at the line separating diving from free swim areas.

c. Steps and ladders shall be recessed or set into the pool wall. No ledges or projections are permitted under the water surface. One set of shallow steps or a ramp with a slope of 1:20 is recommended for access into the shallow end of the pool enabling the elderly and handicapped to enter the pool. Recessed ladders shall be provided in other areas.

6. Overflow System

While scuppers may be used in wading and training pools, a continuous overflow perimeter system is recommended in the main pool. Several examples of this system are shown in Figure 4-2. Prefabricated, stainless steel gutter systems are preferred.

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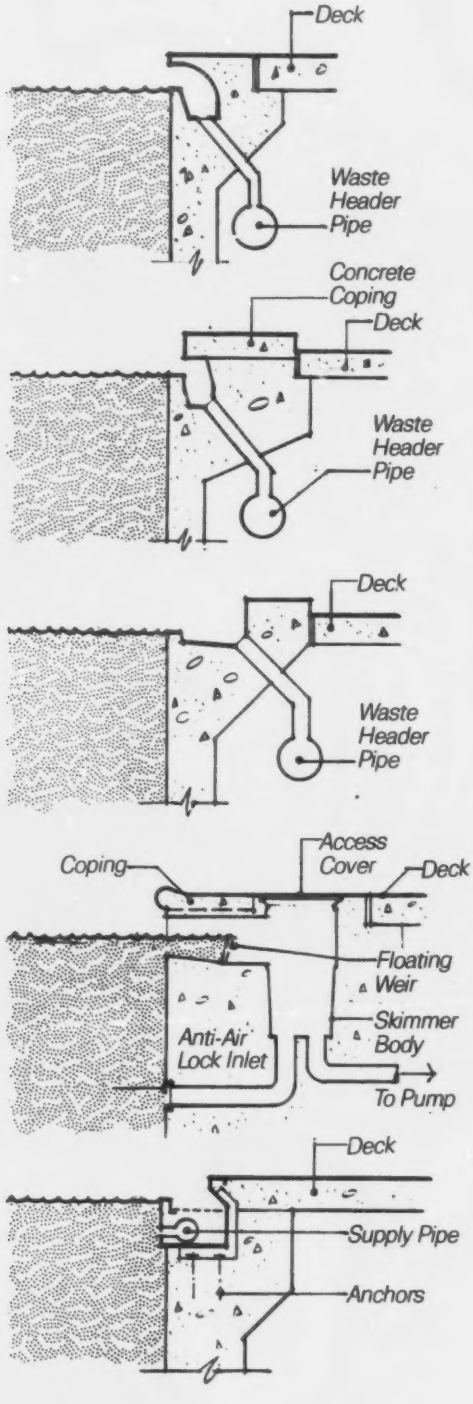

Figure 4-2:
Overflow Rim Systems

Fully Recessed Concrete Gutter

Partially Recessed Concrete Gutter

Concrete Roll Out Gutter

Surface Skimmer

Prefabricated Metal Gutter

7. Swimming Pool Circulation System

a. General Principles:

- All portions of the water distribution system serving the swimming pool and auxiliary facility shall be protected against backflow. Water introduced into the pool either directly or into the circulation system shall be supplied through air gap fittings.
- There shall be no direct physical connection between the sanitary or storm sewer system and any drain from the swimming pool recirculation system.
- Provision shall be made for complete continuous circulation of water through all parts of the swimming pool.
- The valves and draining system for the swimming pool shall be sized to prevent flooding (surcharging) of the sanitary or storm drainage system.

b. Recirculation System Minimum Requirements: A recirculation system, consisting of pumps, piping, filters, water conditioning equipment and other accessories, shall be provided to clarify and disinfect a swimming pool volume of water in six hours or less, thus providing a minimum turnover rate of four times in 24 hours. For pools subject to heavy usage, the turnover rate shall be increased to three hours. Additional information concerning swimming pool layout and recirculation requirements can be found in *AFM 85-13*.

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c. Description of the System: As shown in Figure 4-3, the recirculation system shall include pumps, filters, feeders, city water make up, and a surge tank. Under normal operating conditions, water shall be recirculated from the main drain and through the overflow gutter into the circulating pumps. Approximately 30 percent of the water shall enter the main drain while 70 percent "skims" over the gutter system through the surge tank and thence into the pumping system.

- Hair Filter. A hair filter of stainless steel with removable basket shall be provided to filter and remove hair and other solids entering the drainage system.
- Circulation Pump. A centrifugal circulation pump shall be provided of sufficient capacity to provide the minimum turnover rate to the pool plus an additional allowance of 30 percent. Minimum turnover rates shall be as follows:
  - Main Pool: 4 turnovers in 24 hours
  - Training Pools: 8 turnovers in 24 hours
  - Wading Pools: 8 turnovers in 24 hours
- Motor Controls and Auxiliaries. Provide magnetic starters for the control of the circulation pump including stainless steel enclosure to prevent corrosion. Use non-corroding metallic components, such as aluminum or stainless steel, for all electrical and control items subject to corrosion.

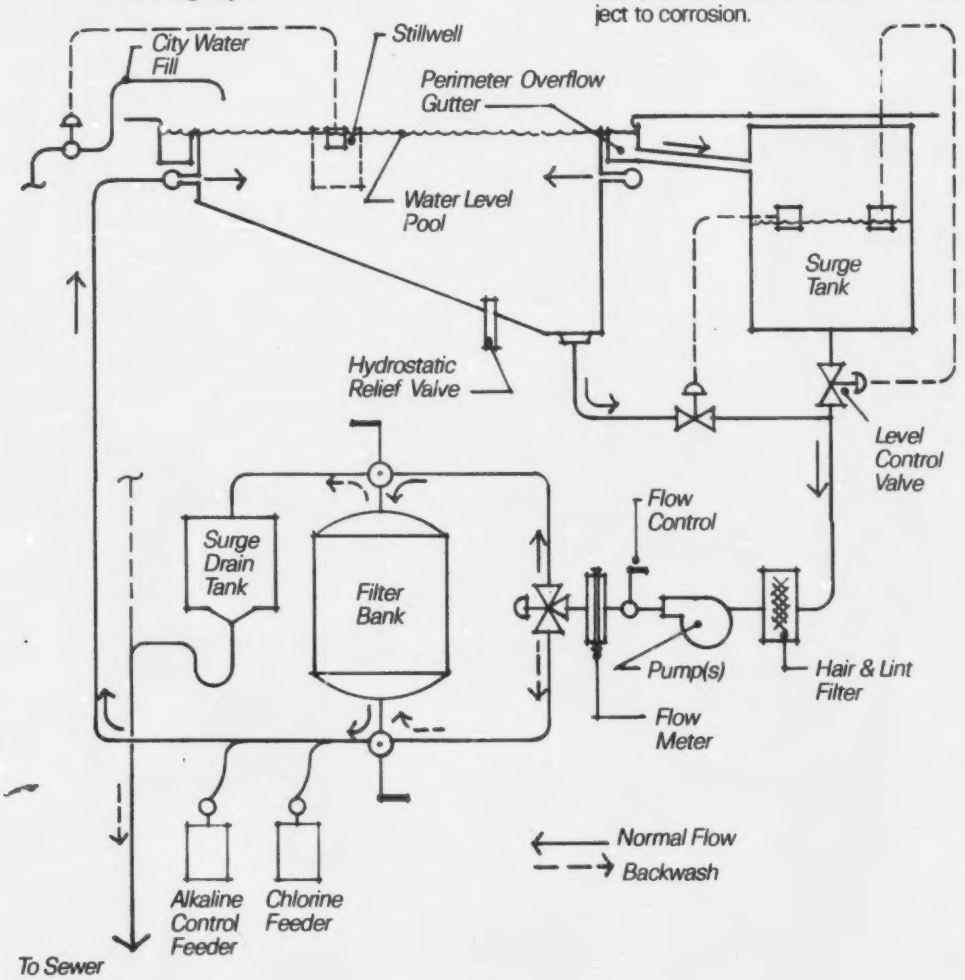

Figure 4-3: Schematic Water Circulation Systems

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- Flow Meter. Provide a flow meter in each main line serving a swimming pool, wading pool or training pool. In addition, provide a mercury type manometer flow meter at the discharge of the circulating pump to control primary flow and backwash. Provide a flow control valve so that the operator may manually control the circulation rate of the pump thereby maintaining the turnover rate throughout a filter cycle from clean to dirty.
- Filters. The filters shall be of the high rate sand pressure filtration type. Filters shall be NSF approved complying with the standards and recommendations of Standard #10.
- Circulation Piping. This piping shall be designed for a maximum velocity of 10'-0" (3.04 m) per second. All suction piping shall be designed for a maximum of 6'-0" (1.83 m) per second.
- Surge Tank. The circulation system shall be equipped with concrete, cast-in-place surge tanks. The purpose of the surge tank is to allow water displaced by pool occupants to be collected in the surge tank and later returned to the pool when the pool is unoccupied. Provide flow control valves to modulate water flow from the main drain and from the surge tank.
- Inlets and Drains. Inlets and drains shall not protrude into the pool or allow entrapment of extremities. One inlet shall be provided for each 600 ft.^{2} (56 m^2) or 15,000 gallons (56,780 lit.) whichever is greater, and all inlets will be located on the pool sides or floor in a manner that completely distributes the water. At least one main drain will be provided in the deepest part of the swimming pool. For pools over 30'-0" (9.1 m) wide, multiple drains will be spaced no more than 30'-0" (9.1 m) apart and no more than 15'-0" (4.5 m) from a side wall. Each drain will have a removable but secure grate which will have sufficient area to maintain water velocity at or below 1'-6" (.45 m) per second. Fresh water may be supplied through a fill spout at least 6" (.15 m) above the pool deck. To prevent injuries and to slightly disturb the water for better diver visibility in the diving area, this spout shall have no sharp edges and be located under one of the diving boards.

Provisions shall be made at all outdoor pool facilities for complete shut-off and drainage during winter months when the facility is not operational and subjected to freezing temperatures.

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8. Heating and Water Temperature

The water temperature shall not be more than 8°F (-13°C) below air temperature nor more than 2°F (-17°C) above air temperature. A heater is necessary for all indoor pools and may be used for outdoor pools where climate conditions warrant its use. Water temperature of 80°F (27°C) is desired except when the air temperature is 90°F (32°C) or above; then a maximum of 74°F (24°C) is suggested. The selected water heater shall have the capacity to bring the pool up to the desired temperature within 24 hours.

9. Lighting

Both area and underwater lighting are required for all pools. Underwater lights will conform to the National Electric Code and provide 100 lumens per ft.² for indoor pools. Surface lighting will provide at least 30 foot candles (323 lux) of illumination on the deck and pool area. For nighttime or indoor competition, 100 foot candles (1.076 Kilolux) are necessary at start and turning ends. Area lighting should be designed to reduce direct glare and veiling reflections on the water surface. Outdoor fixtures shall be daylight corrected, fluorescent or high intensity discharge (HID) type.

Ground Fault Interrupters (GFI) are required for all electrical equipment (vending machines, pool lights, water coolers, etc.).

Underwater light fixtures are available at standard voltage (120 volts), and at low voltage (12 volts). Either wet niche or dry niche fixtures may be used as described in Table 4-1.

C. Bathhouse Construction

The design shall comply with the standards listed in Tables 7-2 through 7-6 as well as satisfy the following general criteria.

1. Structure

Few limitations exist for the bathhouse structure; the structure and finishes must be capable of resisting corrosion from moisture and chemical vapor, but many structural systems will fulfill this requirement.

The indoor pool or bathhouse structure poses an opportunity for interesting geometry, lighting and material use. The basic challenge is to economically span the required height and distance for pool and deck width with moisture resistant materials, such as concrete, galvanized steel, laminated wood, or aluminum.

Both interior and exterior walls should be masonry construction with brick, wood siding, metal panels, stucco, etc. applied to the exterior face at the designer's discretion.

2. Finishes

All surfaces shall be moisture and mildew resistant and easily cleanable. Walls should be a nonabrasive material like smooth block or brick. Ceilings should be wood beams and decking, galvanized metal, or other factory finished material. Floors should have non-slip surfaces impervious to water and mildew. All carpet shall conform to IAW critera in the latest edition of *AFM 88-15*.

Dressing rooms, shower rooms, drying areas, and toilets shall be considered wet areas. All walls and floors in wet areas shall be impervious to water and able to be hosed down. Further, wet area floors shall be non-slip, pitched to floor drains and shall have coved bases at walls and equipment bases.

Table 4-1: Underwater Light Fixture Criteria

	Description	*Installation Technique*	*Installation Depth*	*Servicing Technique*
Wet Niche	Completely sealed but removable fixture that is constantly surrounded by water.	Mounted into recess in pool wall.	Maximum depth of 2'-0" (.61m) from pool water surface.	Extra rubber-covered electrical cord is coiled in the niche. Fixture is removed from niche and lifted to deck for servicing.
Dry Niche	Permanently enclosed fixture that doesn't come into contact with water.	Installed behind pool wall and covered by glass sealed to a metal frame with gaskets.	Can be installed at any depth, usually 2'-0" (.61m) below shallow water surface.	Serviced via a pipe, tunnel, or manhole behind the pool wall.

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3. Natural Daylighting

Because the bathhouse is not heated or air conditioned, and occupancy by bathers is very short term, there are many opportunities for natural daylighting. Beyond the obvious constraints of modesty which requires visual screening up to 8'-0" (2.4 m) or so, glass or even open air penetrations are possible in all areas of the dressing room, toilets, showers, etc. The opportunities for energy savings, natural ventilation, and daylighting offer a design freedom that exists in few other building types.

4. Mechanical Systems

a. Bathhouse Ventilation. Bathhouses for outdoor pools are neither heated nor air conditioned; however, because of the high humidity produced in the shower and dressing area, as well as the potential odor associated with locker storage, the bathhouse should be thoroughly ventilated. The design should provide a minimum of 6 air changes per hour.

b. Enclosed Pool Requirements. The mechanical system for indoor pools must be capable of maintaining an indoor air temperature of 72°-75°F (22°-24°C), water temperature of 78°-80°F (26°C), relative humidity of 50-60 and ventilation of at least 4 complete air changes per hour during high occupancy. Deterioration of materials from condensation should be anticipated and minimized with proper mechanical design and wall transmission values. Air velocity in the immediate pool area should be minimal.

Table 4-2:
Artificial Lighting Criteria

Light Fixture Requirement Key

1 = switched by dimmers to vary light illumination level
2 = provided with moisture-resistant housing
3 = provided with impact-resistant lens or protective grille

Lamp Types

A = warm white fluorescent
B = standard incandescent

	Light Fixture Requirements	*Level of Illumination (Foot-Candles)*	*Recommended Lamp Type*
Dressing Rooms	2, 3	10	A
Shower & Toilet Areas	2, 3	20	A or B
Public Toilets	2, 3	20	A
Office	1	50	A or B
Check-in Area	1	30	A or B
Clothing Storage Area	Dependent on location	30	A
Storage	—	30	A or B
Lobby (Indoor Pools only)	1	15	A or B
Concession Area	1 (2 & 3 if outdoors)	15	A or B
Mechanical Room	3	15	A
Filter Room	2 & 3	50	A

□ All outlets in bathhouse shall be type G.F.I.

5. Plumbing

a. Hot Water. Water for showers will be heated to at least 90°F (32°C), and automatic mixing valves will be installed on showers where hot water is over 105°F (40°C).

b. Shut off valves shall be provided at all fixtures.

c. Floor drains shall be provided in all dressing rooms, shower rooms, and toilet rooms.

6. Electrical Systems

The design shall comply with the standards listed in Table 7-5, as well as satisfy the following general criteria:

a. Lighting. All artificial lighting fixtures in a given space shall be capable of independent switching and shall be located to allow for relamping from floor or catwalk surfaces with the aid of portable ladders or scaffolding if necessary. Light fixture requirements and recommended types, and minimum levels of illumination at 3'-0" (.91 m) above the finished floor, are listed in Table 4-2.

7. Solar Applications

Where a solar assessment shows an active solar application to be cost effective, it shall be included to supplement pool water or space heating requirements.

8. Communications

a. A centrally controlled public address and two-way communication system is required for all pool facilities.
- □ At least one public address speaker shall be provided in each dressing room, office, check-in, public toilet and lobby (at indoor pools). One indoor speaker shall be provided for every 800 ft.² (74.3 m²) of net floor area.
- □ A minimum of two outdoor speakers shall be provided for every 25 meter pool and at least three speakers for every 50 meter pool.
- □ Two-way communication stations will be provided at the check-in area and the office.

b. At least one telephone outlet shall be provided in the check-in and office area. Public pay phones should be in or near the facility.

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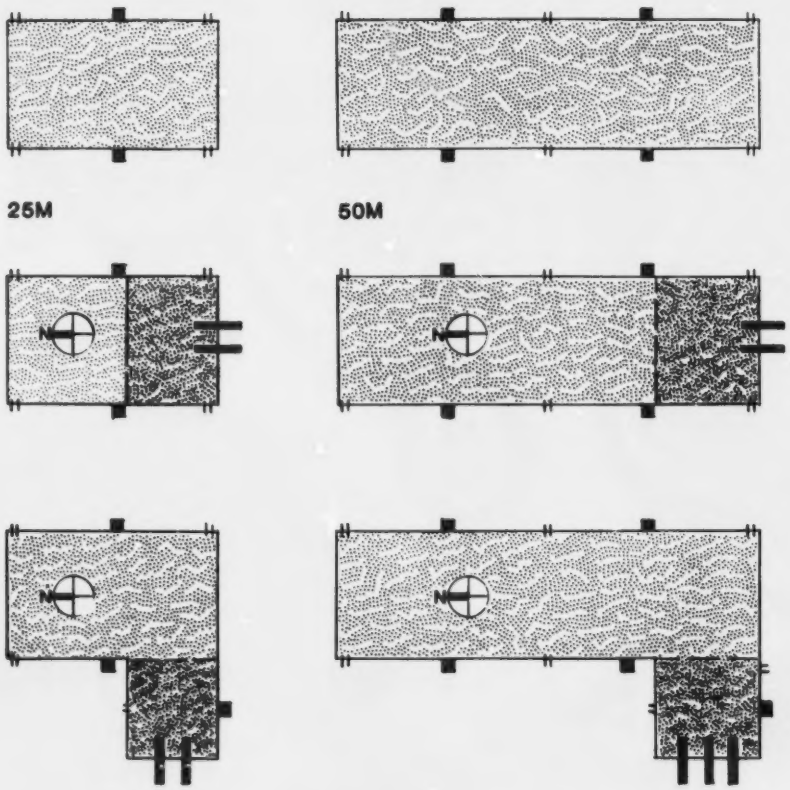
D. Specialties and Equipment

1. Pool Equipment

a. Racing Lane Dividers or Floats. Dividers or floats consist of a set of continuous floats strung on a cable or cord. They are attached at hoops anchored in the pool walls. They must incorporate some method of tensioning so that they can be stretched tight and held in position. One racing lane float divider shall be provided to separate deep water (the diving area) from shallow water.

Figure 4-4: Equipment Locations and Pool Orientations



= *Shallow End: 5'0" (1.52m) or less*
= *Deep End: 5'0" (1.52m) or greater*
= *Lifeguard Chairs*
= *Diving Boards*
= *Ladders*
= *Optimal Orientation*

b. Grab Rails. Grab rails and recessed steps are recommended over projecting ladders. Maximum spacing between grab rails shall be approximately 60'-0" (18.29 m). On 25 meter pools, grab rails and recessed steps shall be placed on the long wall at all corners of the pool. Intermediate grab rails will be provided on 50 meter pools.

c. Lifeguard Chairs. At least one elevated lifeguard stand is required in pools of surface area of over 2000 ft.² (185.8 m²). When the pool is over 4000 ft.² (371 m²), there shall be at least two lifeguard stands, one for every successive 2500 ft.² (232 m²) or major fraction thereof. They shall be installed so that the edge of the footrest lines up with the pool edge. Chairs shall be anchored to the deck surface. However, if a movable bulkhead is incorporated into the pool design, movable chairs are preferred. Locations of lifeguard chairs shall be chosen to reduce water surface glare. Suggested locations of these items are shown in Figure 4-4.

d. Life Safety Equipment. For each 2000 ft.² (185 m²) of water area, the pool shall be supplied with one life pole of 12'-0" (3.7 m) maximum length, and either one 15" (.38 m) or smaller ring buoy attached to a 60'-0" (18.3 m) rope, or two pineapples (wound ropes) of length 1½ times the pool width. These shall be kept in easy access to the pool.

e. Signage. Appropriate signs shall be provided as follows: pool rules at entrance and pool areas, danger warning at chlorine room, emergency numbers at office telephone, warnings outside pool area, room names, entry prohibitions, and instruction necessary for diving or special equipment.

f. Instructional Equipment. Kickboards, floats, buoys, slides, pennants and other equipment used for instruction or recreation should be considered, and provided as necessary to meet program and operating policy requirements.

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g. Competition Equipment.
- Racing lane members and cup anchors shall be supplied to separate each racing course lane in the general use pool.
- Racing Lane Stripes and Target Ends. Requirements for stripes are listed in Table 4-3.

Table 4-3:
Racing Stripe Criteria

	25 Meter Pool	*50 Meter Pool*
Length	5'-0" (1.52m)†	6'-7" (2 m)†
Width	12" (.30m)	12" (.3m)

†*Measured from Pool Edge on Either Side*

- Starting Platforms. When competitive swimming is a program requirement, starting platforms will be supplied for each course lane in the pool area. They shall be 30" (.76m) from the water level. The front edge shall be flush with the vertical end wall of the course. Width shall be 20" (.51m) minimum. The platform shall be sloped at not more than 10° and shall be covered with a non-skid finish. The platforms shall be numbered starting with lane 1 to swimmer's right as they face the course. Lane numbers and starting platforms are color coded as follows:
  - Lane 1: blue
  - Lane 2: red
  - Lane 3: white
  - Lane 4: orange
  - Lane 5: green
  - Lane 6: yellow
  - Lane 7: brown
  - Lane 8: grey
- Automatic Timing Device. Where required, timing devices shall be equipped to be activated by the starter's gun, not have any exposed wires on the pool deck, be able to display all recorded information, and the finish contact pads shall be activated by a light hand touch but not by water turbulence.
- Finish contact pads shall be a minimum of 6'-6" (1.98m) wide by 2'-0" (.61m) in depth. They shall be installed in a fixed position in the center of the lane and flush with the water level.
- Recall Line (optional). It shall be suspended above the racing course at least 4'-0" (1.22m) above the water surface. For a 25 meter course, it shall be located 12 meters from the starting end. For a 50 meter course, it shall be 15 meters from the starting end.

2. Spectator Seating

Seating for spectators shall be provided as required by program requirements. Anticipated peak numbers of viewers shall be accommodated. For a small number of spectators at a family type recreational pool, a raised patio or pavilion is sufficient. For larger numbers, the following guidelines are suggested.

a. Size:
- 2'-0" (.61m) length of bench shall be provided for each spectator.
- 6 to 8 ft.² (.55 to .74m²) per spectator shall be allotted.

b. Circulation and Access:
- Access from a pedestrian path outside of the pool area shall be provided for visitors attending events.
- The spectator seating area shall be fenced off from the pool, and there shall be a lockable gate between the bleachers and the pool deck.

c. Location. Spectator seating shall be located parallel to the racing lines in the pool.

d. Materials and Construction:
- Benches shall be constructed of wood or concrete.
- Seating shall be stepped in elevation to allow maximum visibility.

e. Environmental Considerations. Partial shading and/or partial shelter are desirable.

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3. Clothing Storage Systems

The means of clothing storage directly affects the internal organization of the bathhouse. One of the following methods shall be chosen:

- Coin operated lockers within the dressing area.
- Basket storage in the control area operated by the attendant.
- Basket storage in dressing room operated by pool user, with padlock.
- Table 4-4 lists criteria for each of these various systems.

Table 4-4:
Comparison of Locker and Basket Storage Systems

	Convenience	*Security and Staffing*
Lockers (Coin-operated) at Dressing Rooms	▫ Most convenient ▫ Most secure ▫ 30" or higher lockers allow clothes to be hung.	▫ Highly secure ▫ Minimum surveillance required ▫ No staff operation required.
Baskets at Control Desk	▫ Awkward for storage of adult street clothes. ▫ All clothing must be folded.	▫ Highly secure ▫ Requires greater staff time. ▫ Security is the responsibility of management.
Baskets at Dressing Rooms with user provided padlocks	▫ Awkward for storage of adult street clothes. ▫ Users must remember to bring own locks. ▫ Most convenient system if user needs repeat access to basket during visit.	▫ Minimal security ▫ No staff operation required, but surveillance is desirable.

a. Locker System. Coin-operated lockers shall be located in dressing rooms and shall be corrosion resistant, easily cleaned, and not conducive to dust or water accumulation. If space will allow, the optimal arrangement is two tiers which permits the hanging of adult street clothes. Tiers of 5 or 6 lockers shall be used where less area is available. The best locker arrangement is back-to-back in bays or alcoves off 2 main circulation aisles. Each bay shall have a 16" (.41m) high bench in the middle for the entire length. The bench shall be a minimum of 2'-8" (.81m) from the locker doors and situated to allow turning space for the handicapped. When a bay is more than 16 lockers long, the bench shall have a 3'-0" (.91 m) break every 15'-0" (4.6m). Lockers shall be installed on a concrete pad with a coved base.

b. Basket System. Baskets shall be wire mesh or perforated corrosion resistant, easily cleaned and not conducive to dust or water accumulation. They shall be stored on racks which will accommodate 5 to 6 baskets vertically. Both baskets and racks shall be designed to accommodate padlocks when racks are placed in the dressing area. Padlocks are not required when the baskets are stored in the check-in area. The best arrangement is back-to-back in bays as with lockers. Racks shall be installed on a concrete pad with a coved base.

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A. Pool and Deck Areas

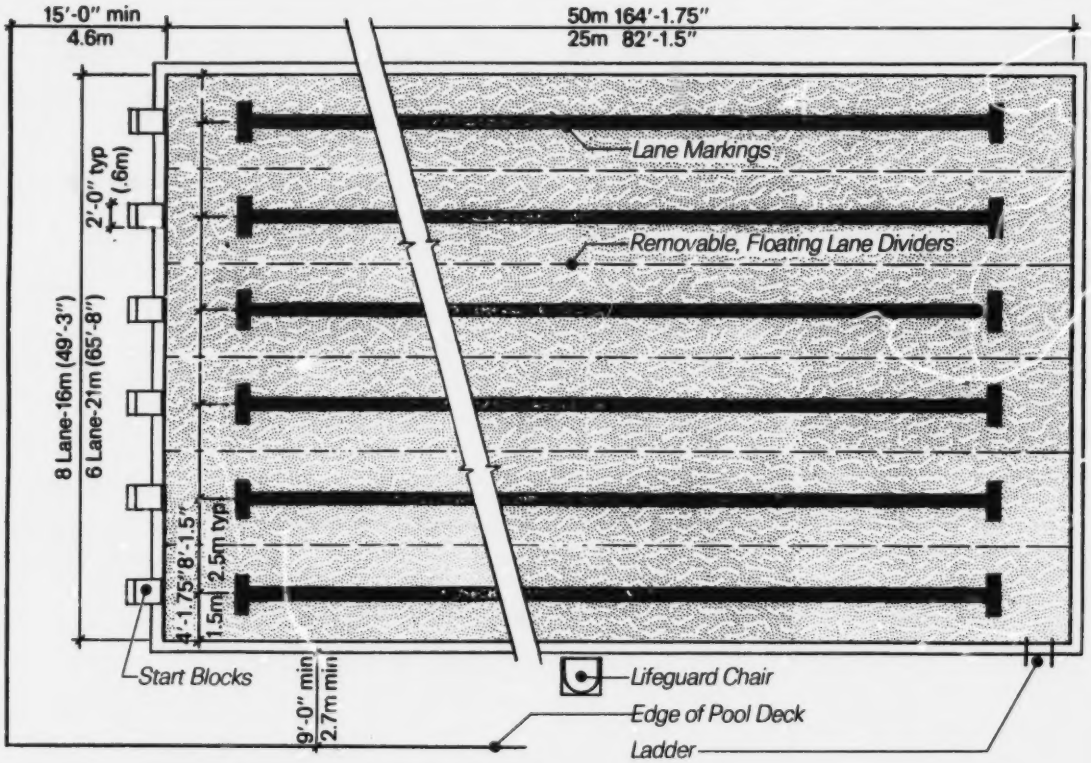
1. General Use Pool

a. Use. This space is used for a range of activities, including lane swimming, instructional programs, competitive swimming, and general recreational swimming.

b. Circulation and Adjacency:
- Visual monitoring of the pool area from the staff office is required.
- Access to the pool from the bathhouse area shall be near the shallow end.

c. Size. The size of the general use pool is determined by *AFM 86-2* and is shown in Figure 5-1.
- Length: 82'-2" (25.0 m) or 164'-4" (50.0 m)
- Pool Width: 6 lane, 45'-0" (16.0 m) or 8 lane, 59'-0" (21.0 m)
- Lane Width: interior lanes, 7'-0" (2.5 m); outside lanes, 8'-6" (3.0 m)
- Depth: 3'-6" to 5'-0" (1.0 to 1.5 m), except in diving area.
- Pool Capacity: 1 person per 15ft² (1.4 m²) for water depth 3'-6" to 5'-0" (1.0 to 1.5 m)
- Deck Area: 2 to 3 times pool area

Figure 5-1:
General Use Pool Layout



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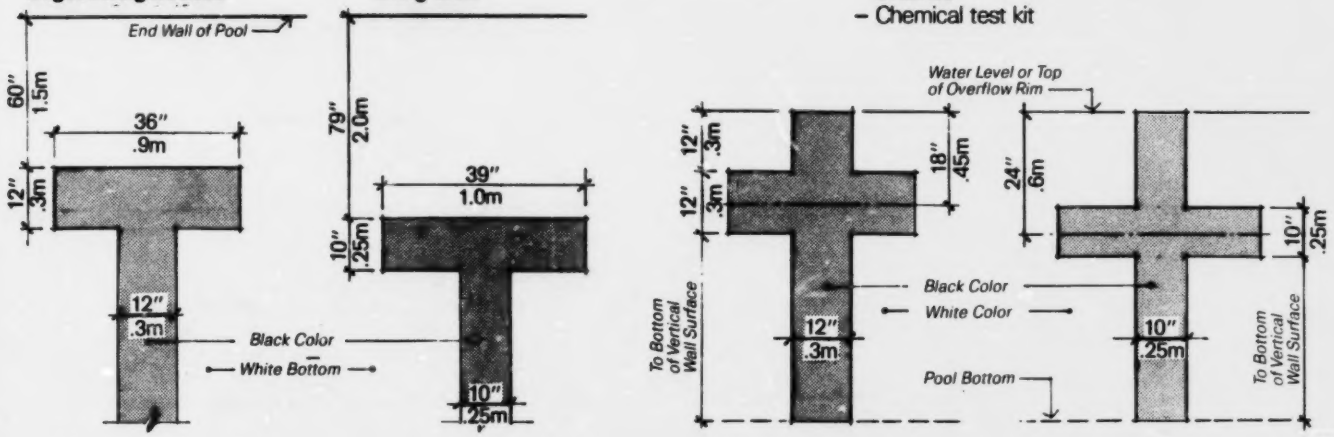
d. Equipment and Furnishings.
- ▫ Life Guard Stands: minimum 1 per 2000 ft.² (185.8 m²) of pool surface
- ▫ Depth markers at pool's edge
- ▫ Grab rails and recessed step ladders
- ▫ Competition Equipment:
- – Racing lane dividers and cup anchors
- – Racing lane stripes and target ends as shown in Figure 5-2
- – Starting platform (optional)
- – Automatic timing devices (optional)
- – Recall line (optional)
- – Backstroke turn indicator (optional)
- ▫ Safety Equipment:
- – Ring Buoys or Life Rings: minimum 50'-0" (15.24 m) throw line
- – Life Lines: between 5'-0" (1.52 m) depth and diving area
- – Shepherd's Crooks: min. 12'-0" (3.65 m) long
- – Resuscitator
- – First aid kit
- – Stretcher
- ▫ Instructional Equipment (all optional):
- – Kick boards
- – Swim "bubbles" or trainers
- – Masks
- – Scuba equipment
- – Scoreboard
- – Chalkboard
- – Electric clocks
- – Water polo goals
- – Water basketball goals
- ▫ Pool Cleaning Equipment:
- – Vacuum
- – Hand skimmers
- – Brushes
- – Chemical test kit

Figure 5-2: Racing Line and Target Configurations



Short Course Lane Line Bottom Configuration

Long Course Lane Line Bottom Configuration

Short Course End Wall Target

Long Course End Wall Target

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2. Diving Area

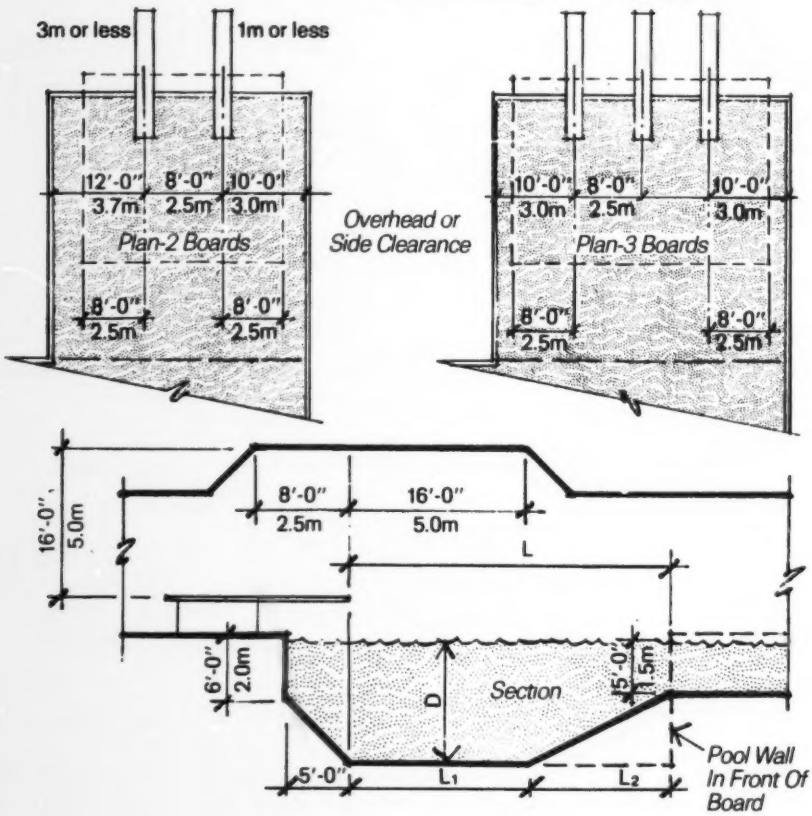
a. Use. This area is used for competitive diving, recreational diving, scuba and other activities requiring deep water.

b. Circulation and Adjacency. The diving area may be handled in one of three ways:
- ▫ Adjacent to the deep end of the general use pool as shown in "L" shaped pools (preferred)
- ▫ Incorporated in the end of the general pool
- ▫ A separate pool exclusively for diving

c. Size. Figure 5-3 shows the minimum diving area dimensions.
- ▫ For 25 meter pools containing one 1 meter board and one 3 meter diving board:
  - – Minimum Length: 32'-0" (9.7m)
  - – Minimum Width: 32'-0" (9.7m)
  - – Minimum Depth: 10'-0" (3.0m) at deepest; bottom slope not more than 1:3
- ▫ For 50 meter pools containing two 1 meter boards and one 3 meter board
  - – Minimum Length: 39'-0" (11.8m)
  - – Minimum Width: 40'-0" (12.1m)
  - – Minimum Depth: 12'-0" (3.6m); bottom slope not more than 1:3
- ▫ Capacity: 25 ft.² (2.35m.²) per person for water depths from 5'-0" to 12'-0" (1.52 to 4.66 m); not more than 10 divers per board
- ▫ Minimum pool ceiling heights above water surface for indoor pools: 1.0 m diving board = 19'-9" (6.0 m); 3.0 m diving board = 26'-4" (8.0 m). See Figure 5-3 for clarification.

d. Equipment and Furnishings.
- ▫ Diving Stands:
  - – Springboard: made of aluminum, fiberglass or wood coated with a non-skid surface. For boards of 3 m or more, an open-grating type of construction is required to permit divers to view the water below. Dimensions are 16'-0" (4.9 m) long, and 1'-8" (.5 m) wide. It should be installed to be level. The number of springboards depends on the size of the diving area to be included. Springboard anchors should be imbedded in the deck or other surface of sufficient mass.
  - – Adjustable Fulcrum: should adjust through a range of 2'-0" (.61 m) forward from a point 5'-6" (1.7 m) from the rear anchor of the board. The fulcrum mechanism should be covered to prevent injury to fingers or toes.
  - – Handrails: Boards over 2'-0" (.61 m) in height shall have 3'-0" (.91 m) high handrails extending to the water's edge.
- ▫ Life line, if diving is part of main pool
- ▫ Water surface agitator to increase diver visibility (water jet from the overflow system or air bubbler inlets in the pool bottom)
- ▫ Same equipment is required for general use pool.

Figure 5-3:
Diving Area
Minimum Dimensions



Board Height Above Water	*1m*	*3m*
L = Distance To Pool Wall	*29'-0" (8.8m)*	*34'-0" (10.4m)*
L_1 = Length of Deepest Water	*20'-0" (6.1m)*	*20'-0" (6.1m)*
L_2 = Runout to 5'-0" Depth	*9'-0" (2.7m)*	*14'-0" (4.3m)*
D = Water Depth	*10'-0" (3.0m)*	*12'-0" (3.7m)*

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e. Special Planning Requirements.
- For Competition: minimum number of springboards is one 1 m board and one 3 m board. Consult AAU, NCAA, Interscholastic or FINA for detailed specifications.
- For more than 3 m diving boards: high diving platforms (7.4 and 10.0 m) require a structural steel, precast concrete, or laminated wood structure. Boards shall be of an open-glazing construction. Protective measures of non-slip surfaces and handrails shall be taken. An elevator or manlift is recommended for easy access.
- Outdoor diving boards should face north or east.

3. Wading Pool

a. Use. A shallow pool is needed for small children to play and swim.

b. Circulation and Adjacency.
- The wading pool shall be physically separated from the main pool.
- It shall be surrounded by 3'-0" (10.9 m) fencing with a closing gate.

c. Size.
- Typical areas are 100 ft.² (9.29 m²) for a 25 meter pool and 150 ft.² (13.94 m²) for a 50 meter pool.
- Depth: 6" to 18" (.15 to .45 m); with slope not more than 1:15

d. Special Planning Considerations.
- Water should be filtered more frequently than main pool (8 times in 24 hrs).
- Normally constructed with scuppers, not continuous perimeter overflow system.
- Seating for supervision (optional).

Table 5-1:
Minimum Clear Deck Widths

	Indoor Pool	*Outdoor Pool*
Sides	9'-0" (2.8m)	12'-0" (3.6m)
Shallow end	15'-0" (4.6m)	20'-0" (4.6m)
Deep end	20'-0" (6.1m)	20'-0" (6.1m)

4. Training Pool

a. Use. This pool is to enable young children as well as the elderly and handicapped to use a pool without the threat of deep water and/or inconvenient access. It is particularly useful for training children not tall enough to hold their head above water in the main pool.

b. Circulation and Adjacency.
- This pool should be placed near the shallow end of the main pool.
- This pool should be separated from the main pool by a low fence.
- Ideally, access to this pool should be by ramp or stairs.

c. Size.
- Typical areas are 600 to 800 ft.² (55.74 to 74.32 m²) for 25 m pool; and 800 to 1000 ft.² (74.32 to 92.9 m²) for a 50 m pool.
- Depth: 2'-0" to 3'-0" (.61 to .91 m)
- Capacity: 15 ft.² (1.39 m²) per person

d. Special Planning Considerations. Training pools may be constructed with scuppers or continuous perimeter overflow system.

5. Deck Area

a. Use. The paved area around the pool(s) serves as a circulation system and lounging area for users.

b. Size. Table 5-1 lists the minimum clear deck widths for both indoor and outdoor swimming pools.
- Outdoor Pools: Deck area is 2 to 3 times pool area.
- Indoor Pools: Deck area is .75 to 1.5 times pool area.
- Capacity: 33 ft.² (3.06 m²) per person.
- Spectator Seating (optional): 3.0 to 5.0 ft.² (.27 to .46 m²) of additional deck area shall be provided for each spectator at viewing areas. Portable retractable seating may be provided for up to 600 people.
- Seating shall have the capacity to be separated by low fence from pool deck area during competition to keep spectators away from competitors.

c. Materials and Finishes. The deck shall be constructed of impervious material, such as concrete, bluestone, glazing tile, or other hard, non-slip surface. The 10'-0" (3.05 m) perimeter area around the pool is considered a wet area and should be textured to prevent slipping when wet. All areas shall be pitched to provide

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positive drainage; a slope of ¼" (6mm) per 1'-0" (.30m) is the minimum. Water depths and "No Diving" signs shall be placed at the rim edge.

d. Equipment and Furnishings.
- ▫ One drinking fountain
- ▫ Telephone
- ▫ Bulletin board (optional)
- ▫ Lounge chairs
- ▫ Night lighting

6. Outdoor Play Area

a. Use. This outdoor area is provided for children to play in a supervised setting.

b. Circulation and Adjacency.
- ▫ This area shall have easy access to the wading or training area.
- ▫ The play area shall be fenced with a lockable gate.

c. Size. The size of this area is dependent upon the size of desired play equipment. Typical areas are 200 to 400 ft.² (18.58 to 37.16 m²) for a 25 meter pool and 400 to 600 ft.² (37.16 to 55.74 m²) for a 50 meter pool.

d. Equipment and Furnishings.
- ▫ Play equipment such as jungle gyms, teeter totters and play sculpture.
- ▫ Benches or chairs for adult supervision.

e. Materials and Finishes. The area shall be grass or concrete. Loose particles, such as gravel, wood chips, or sand, shall not be used, as they can be transmitted to the pool area.

f. Special Environmental Considerations. Partial shading is recommended.

7. Grassed Sunbathing Area

a. Use. This outdoor area is used for additional sunbathing space, lounging and recreational activities beyond the pool deck.

b. Circulation and Adjacency.
- ▫ The area shall have direct access to the pool and deck areas.
- ▫ The grassed area may be segregated from the pool deck with low fencing if advisable to reduce tracking of clippings.

c. Size. Optional.

d. Equipment and furnishings.
- ▫ Lounge chairs
- ▫ Tables with sun umbrellas and chairs

e. Special Environmental Considerations. Partial shading is recommended.

B. Bathhouse Spaces

1. Check-in

a. Use. This area serves to monitor the flow of people in and out of the bathhouse. If clothing storage is handled in this area, a basket or locker system is also required. This space also may serve as a surveillance station for the pool and deck area.

b. Circulation and Adjacency.
- ▫ Check-in shall be immediately adjacent to the entrance to both dressing areas.
- ▫ Visibility of and direct access to pool and deck area is desired.
- ▫ If clothing storage is handled in this space, the check-in area shall be immediately adjacent to dressing room exits onto the pool area.

c. Size.
- ▫ With Basket Storage: Typical floor areas are 400 to 450 ft.² (37.16 to 41.8 m²) for a 25 meter pool, and 600 to 650 ft.² (55.74 to 60.38 m²) for a 50 meter pool.
- ▫ Without Basket Storage: Typical floor areas are 50 to 100 ft.² (4.65 to 9.29 m²) for both 25 and 50 meter pools.

d. Equipment and Furnishings.
- ▫ Basket System: One basket shall be provided for each user (if provided in this area).
- ▫ Desk or counter to hold sign-in logs, etc.
- ▫ Chair
- ▫ Tie-in with PA system (optional)
- ▫ Telephone
- ▫ Exterior clock visible from pool area
- ▫ Bulletin board (optional)

e. Special Environmental Considerations. Adequate shading shall be provided if check-in area is outdoors.

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Figure 5-4:
Dressing Room
with Basket Storage

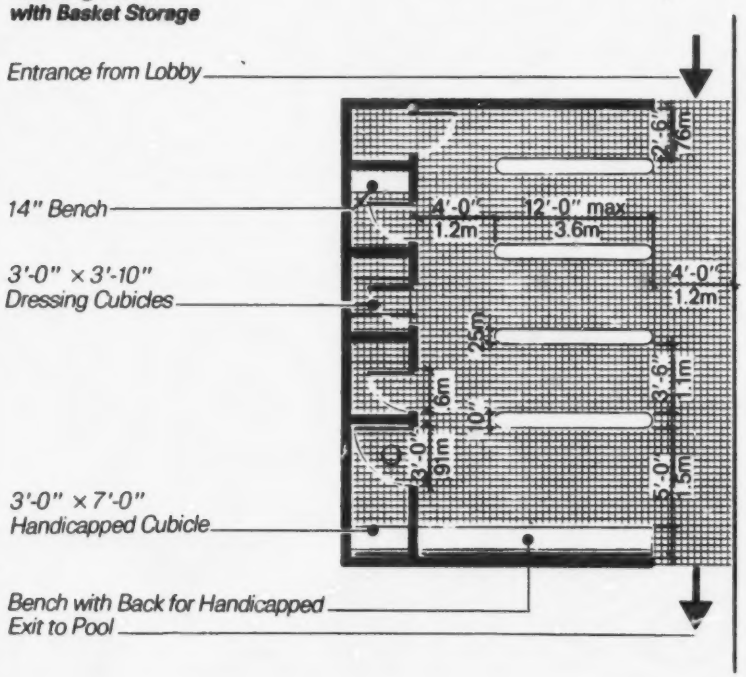

Table 5-2:
Toilet Room Fixture Criteria

	Fixtures/Men	*Fixtures/Women*	*Floor Area Required* ft.²	m²
Water Closet	1 / 40	1 / 20	30	2.79
Handicapped WC	1 min.	1 min.	50	4.64
Lavatory	1 / 40	1 / 40	10	.93
Handicapped Lav.	1 min.	1 min.	40	3.72
Urinal	1 / 40	N/A	15	1.40
Drinking Fountain	1 min / 100	1 min. / 100	15	1.40

2. Dressing Area

a. Use. The dressing area is used by those participating in swimming programs for changing and dressing. In dressing rooms equipped with lockers or baskets, space is also provided for storage of personal belongings. Separate facilities shall be provided for men and women.

b. Circulation and Adjacency. Figures 5-4 and 5-5 show typical layouts and circulation arrangements for dressing areas.
- Dressing areas shall be readily accessible to the pool deck and check-in area.
- Dressing areas shall be adjacent to shower, drying, and toilet areas.

c. Size.
- Typical floor areas for dressing rooms with integral clothing storage are 500 to 900 ft.² (46.45 to 83.61 m²) for a 25 meter pool and 825 to 1500 ft.² (76.64 to 139.35 m²) for a 50 meter pool.
- Typical floor areas for dressing rooms with clothing storage at check-in are 450 to 675 ft.² (41.8 to 62.7 m²) for a 25 meter pool and 800 to 1000 ft.² (74.32 to 92.9 m²) for a 50 meter pool.

d. Equipment and Furnishings.
- Locker or Basket System: One basket or locker shall be provided for each user (user number based on pool capacity). Certain lockers shall be designated for staff use.
- Benches
- Hair dryers
- Clocks (optional)
- Drinking fountain
- Sound system
- Mirrors: one full length
- Bulletin board (optional)

e. Materials and Finishes.
- Floor: Ceramic, or g'azed tile, concrete, or other skid-resistant material.
- Base: Ceramic or glazed tile.
- Walls: Glazed or painted masonry.
- Ceiling: Moisture-resistant material (wood, galvanized metal, etc.).

f. Special Planning Considerations.
- At least one bench with a back shall be provided for use by the disabled and elderly.
- 2 to 5 private dressing cubicles with seats or benches shall be provided in the women's dressing area.

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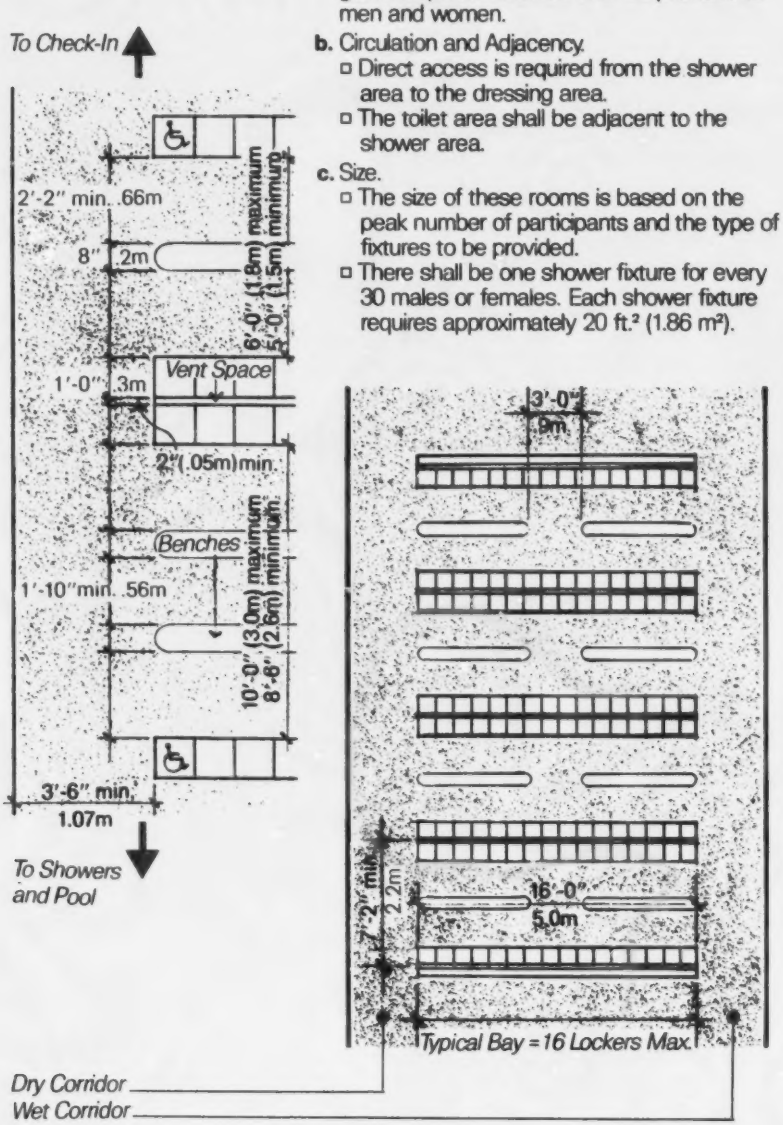
Figure 5-5:
Dressing Room with Lockers



3. Shower Area

a. Use. These rooms are used by participants, before and after swimming, for personal hygiene. Separate facilities shall be provided for men and women.

b. Circulation and Adjacency.
- Direct access is required from the shower area to the dressing area.
- The toilet area shall be adjacent to the shower area.

c. Size.
- The size of these rooms is based on the peak number of participants and the type of fixtures to be provided.
- There shall be one shower fixture for every 30 males or females. Each shower fixture requires approximately 20 ft.² (1.86 m²).
- Typical floor area for both male and female shower areas is 300 to 500 ft.² (27.87 to 46.45 m²) for a 25 meter pool and 500 to 700 ft.² (46.45 to 65.03 m²) for a 50 meter pool.
- At least one private shower cubicle shall be provided for use by the handicapped.
- Ceiling height shall be at least 9'-0" (2.75 m).

d. Equipment and Furnishings. *AFM 88-8* Chapter 4, and *AFM 88-15* Chapter 4, present the specific shower room fixture and accessory requirements.

e. Materials and Finishes.
- Floor: Ceramic tile.
- Base: Glazed or ceramic tile.
- Wainscot: Glazed or ceramic tile.
- Walls: Painted masonry, moisture-resistant gypsum board, portland cement plaster, or high strength gypsum plaster.
- Ceiling: Painted moisture-resistant gypsum board, Keene's cement plaster, portland cement plaster, or high strength gypsum plaster.

f. Special Planning Considerations.
- Men's shower rooms shall be furnished with either column or wall mounted shower heads.
- Women's shower rooms shall be furnished with two to five individual stalls with curtains.
- All fittings shall be vandal-proof grade.
- Handicapped access will not permit lip at edge of shower area.

4. Toilet Areas

a. Use. These rooms are used by participants for personal hygiene. Separate facilities shall be provided for men and women.

b. Circulation and Adjacency.
- Direct access is required from the toilet area to the dressing area.
- The toilet area shall be adjacent to the shower area for each sex.

c. Size. The size of these rooms is based on the peak number of participants and the type of fixtures to be provided.
- Fixture requirements and room size shall be determined by using Table 5-2.
- Typical floor area for toilet rooms is 200 to 300 ft.² (18.58 to 27.87 m²) for a 25 meter pool and 400 to 600 ft.² (37.16 to 55.74 m²) for a 50 meter pool.
- Ceiling height shall be at least 9'-0" (2.75 m).

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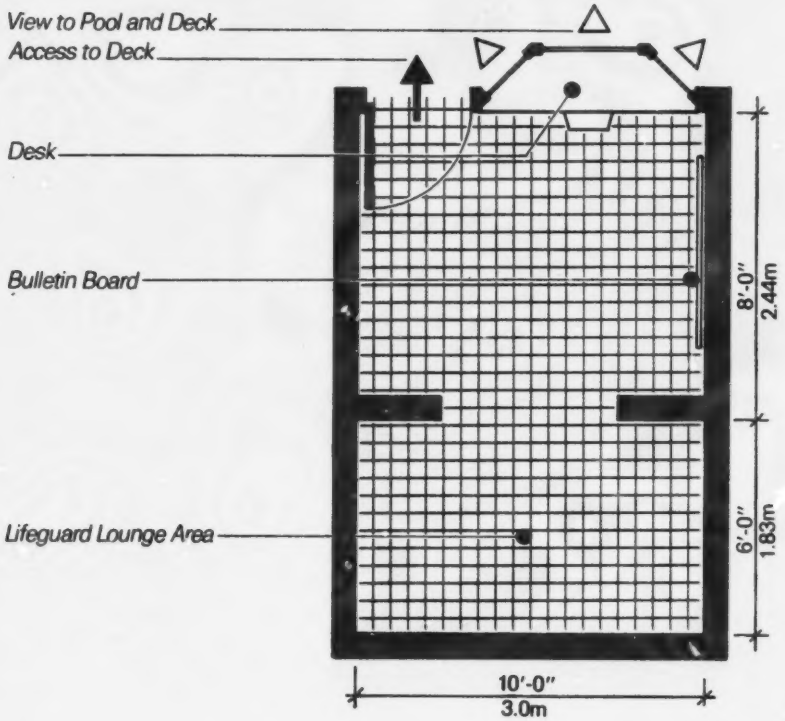
d. Equipment and Furnishings. *AFM 88-8* Chapter 8, and *AFM 88-15* Chapter 4, prescribe the specific toilet room fixture and accessory requirements.

e. Materials and Finishes.
- Floor: Ceramic tile.
- Base: Glazed or ceramic tile.
- Walls: Painted masonry, moisture-resistant gypsum board, portland cement plaster, or high strength gypsum plaster.
- Ceiling: Painted moisture-resistant gypsum board, Keene's cement plaster, portland cement plaster, or high strength gypsum plaster.

f. Special Environmental Considerations.
- A separate exhaust system shall be provided for the toilet area.
- Ideally, a drying area should be provided near or in the toilet area for people leaving the shower. This area would include mirrors, lavatories and hair dryers.

Figure 5-6:
Staff Office



5. Office

a. Use. The managers's office is used by the manager and staff as a control center and a place for the manager to conduct his day to day business which includes counseling his staff. Provide a separate small lounge area for pool staff and lifeguards.

b. Circulation and Adjacency. Visual monitoring of and easy access to the pool area from this space are mandatory. Figure 5-6 shows a typical layout and circulation arrangement for the manager's office.

c. Size.
- Typical office areas are 100 ft.² (9.29 m²) for all swimming pool sizes. Under no circumstances shall an office exceed 144 ft.² (13.38 m²)
- Size will be determined by number of staff and the needs of those using the space.

d. Equipment and Furnishings.
- One desk
- Two to five chairs
- Shelving unit
- First aid kit
- Tackboard (optional)

e. Materials and Finishes.
- Floor: Carpet or resilient tile.
- Base: Resilient tile.
- Walls: Painted masonry, or painted or vinyl covered gypsum board.
- Ceiling: Acoustical or painted gypsum board.

f. Special Considerations. The central controls for the public address, lighting systems, and all environmental controls shall be located in the office area.

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6. Filter Room

a. Use. This space is used for the storage of all pool mechanical systems. It houses pumps, filter tanks, water heaters, chlorine feeders, storage tank and control panel.

b. Circulation and Adjacency.
- The filter room shall be separate from areas of public access.
- This space shall be convenient for maintenance access.
- This space shall be adjacent to the chlorine and chemical storage room.

c. Size. The filter room size is determined by the size of the equipment to be placed within.
- Sufficient space for the placement, replacement, and servicing of each piece of equipment shall be allotted.
- Typical areas are 300 to 400 ft.² (27.8 to 37.2 m²) for a 25 meter pool, and 400 to 600 ft.² (37.2 to 55.7 m²) for a 50 meter pool.
- Ceiling height shall be sufficient to accommodate all equipment and attendant piping.

d. Equipment and Furnishings.
- Filter tanks
- Pumps
- Surge tanks (may be located elsewhere)
- Water heaters (optional)
- Chlorine and disinfectant feeders

e. Materials and Finishes.
- Floor: Concrete that is structurally designed to support all required equipment.
- Walls: Painted masonry.
- Ceiling: Painted gypsum board or exposed ceiling.

f. Special Planning Considerations.
- Doors or openings shall be sized to permit the replacement of all equipment.
- Ground fault protection of all motors, lighting fixtures, and power receptacles at suitable levels is mandatory.

g. Special environmental considerations. Ventilation is required for motors and heaters.

7. Chemical Storage Room

a. Use. This room is used for the storage of gaseous chlorine and other chemicals.

b. Circulation and Adjacency.
- There will be adjacent access to the filter room.
- The chemical storage room shall be barred from public access.

c. Size. Typical floor area for a chemical storage room is 30 to 50 ft.² (2.79 to 4.65 m²) for a 25 meter pool and 50 to 70 ft.² (4.65 to 6.5 m²) for a 50 meter pool.

d. Equipment and Furnishings.
- Chlorine tank racks
- Gas mask just outside

e. Materials and Finishes.
- Floors: Concrete.
- Walls: Painted masonry.
- Ceiling: Fireproof gypsum board.

f. Special Planning Considerations.
- Doors shall be secure from break-ins.
- Warning signs shall be posted concerning gaseous chlorine storage.
- Room should be fire and explosion proof.
- Room shall have a vent fan capable of one complete air change in 1 to 4 minutes.

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8. Equipment Storage

a. Use. This space is used to store all life saving equipment, instructional and competition swimming supplies, and any other items related to pool functions.

b. Circulation and Adjacency.
- This space must open directly onto the pool deck.
- This space should be quickly reached by staff members in case of emergency (i.e., it should be close to the staff office and lifeguard stations).

c. Size.
- The width of this space should be a minimum of 8'-0" (2.44 m) to allow storage of materials on either side of a small center aisle.
- The minimum length is usually established by the length of the shepherd's crook or other safety poles used in life saving procedures. A 16'-0" (4.88 m) length is recommended if safety equipment has not been selected prior to design.

d. Equipment and Furnishings.
- Instructional Equipment: Kickboards, racing lane floats, ropes, flags, starting platforms, and other competition equipment, as well as equipment for games or water shows.
- Pool Maintenance Equipment: Pool vacuum, chemical testing supplies, hose and sprinklers, scoop net, miscellaneous tools.
- Safety Equipment: Shepherd's crooks, ring buoys, life poles, life lines, resuscitator, first aid equipment, stretcher.

e. Materials and Finishes.
- Base: Resilient tile.
- Floor: Resilient tile, concrete, or pool deck material.
- Walls: Painted masonry.
- Ceiling: Painted gypsum board or exposed structure.

f. Special Considerations. Area should be well ventilated.

9. Maintenance Storage

a. Use. This area is used to store equipment and supplies related to the maintenance of the facility.

b. Circulation and Adjacency. No specific requirements though access to this area from the pool deck is usually avoided unless grass areas are planned inside the pool fence.

c. Size. The final dimensions shall be determined by the size and amount of equipment to be stored. A major item influencing size is the lawn mower. These vary greatly in size if ride-on equipment is used. Minimum recommended size is 6'-0" x 8'-0" (1.83 x 2.44 m).

d. Equipment and Furnishings. Lawnmower, rakes, brooms, ladder, cleaning equipment, clippers, etc., as required by site conditions.

e. Materials and Finishes.
- Floor: Concrete.
- Walls: Painted masonry.
- Ceiling: Painted gypsum board or exposed structure.

f. Special planning considerations. Area should be well ventilated.

10. Mechanical Room (indoor pools only)

a. Use. This room serves as the primary location for the mechanical and electrical equipment in the facility.

b. Circulation and Adjacency.
- Direct access shall be provided from this room to an exterior service entrance.
- All circulation associated with the mechanical services and maintenance operations shall be separate from circulation provided for the participants and public.

c. Materials and Finishes.
- Floor: Concrete.
- Walls: Painted masonry.
- Ceiling: Painted gypsum board.

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d. Special Planning Considerations.
- The mechanical room shall be located to minimize lengths of distribution services.
- Service doors should be treated architecturally in a manner that will minimize their visibility or impact on the design.

11. Concession Area (outdoor pools only)

a. Use. This space may contain vending machines, public telephones, or space for simple food and drink service. Inclusion of this area in the design will be determined by base policy.

b. Circulation and Adjacency.
- If seating is provided, this area should have good visibility of the pool and deck.
- This space should be adjacent or easily accessible from major sunbathing areas.
- This space shall be separated from the pool area as required by pool policy.
- Service access shall be provided through an entrance separate from the bathhouse.

c. Size. Typical floor areas range from 100 to 150 ft.² (9.3 to 14.0 m²)

d. Equipment and Furnishings. (optional)
- Vending machines for coffee, soft drinks, candy and ice cream
- Waste receptacles
- Public telephones
- Drinking fountain
- Counter for food service
- Tables, chairs and umbrellas

e. Materials and Finishes. The walking surface shall be finished with a water resistant material which can be easily and repeatedly cleaned.

f. Special Planning Considerations. Some shading should be provided.

g. Special Environmental Considerations.
- Electrical and plumbing service may be required for the vending machines and drinking fountains.
- No food items shall be distributed in glass containers or bottles.

12. Lounge (indoor pools only)

a. Use. The lounge provides space for informal relaxation where users have access to telephones and vending machines. Space for simple food and drink service may also be provided. Inclusion of this area in the design will be determined by base policy.

b. Circulation and Adjacency.
- The lounge shall be readily accessible to the lobby, all support spaces, and public toilets.
- The lounge shall not have direct access to the pool and deck.
- Ideally, users should have visual access to the pool and deck from this area.

c. Size. Floor area for the lounge shall approximate 20 ft.² (1.85 m²) per occupant.

d. Equipment and Furnishings.
- Vending machines (optional)
- Waste receptacles
- Public telephones
- Drinking fountains
- Counter for food service (optional)
- Tables and chairs as required

e. Materials and Finishes.
- Floors: Carpet or resilient tile.
- Walls: Painted masonry, painted or vinyl covered gypsum board, or painted plaster.
- Ceiling: Acoustical or painted gypsum board.

13. Public Toilets

a. Use. These toilets are primarily used by visitors or spectators because of the limited access requirements to the dressing areas. Separate rooms shall be provided for men and women.

b. Circulation and Adjacency. These rooms should be located adjacent to the lobby (in indoor pools) and be readily accessible to spectator viewing areas in all types of facilities.

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c. Size. The peak number of spectators or visitors anticipated will establish the size of the public toilets. An equal number of men and women shall be assumed unless local circumstances indicate otherwise. Table 5-3 lists fixture criteria for public toilets.

d. Equipment and Furnishings. *AFM 88-8* prescribes the specific toilet room fixture and accessory requirements.

e. Materials and Finishes.
- Floor: Ceramic tile.
- Base: Glazed or ceramic tile.
- Walls and Wainscot: Glazed or ceramic tile.
- Ceiling: Painted moisture-resistant gypsum board, Keene's cement plaster, portland cement plaster, or high strength gypsum plaster.

f. Special Environmental Considerations. A separate exhaust system shall be provided for the toilet rooms.

14. Lobby (indoor pools only)

a. Use. The lobby serves as the primary entrance to the facility for all participants, visitors and spectators.

b. Circulation and Adjacency.
- Direct access from the lobby is required to all spectator viewing area and the dressing rooms.
- Public toilets, staff offices, and the concession areas (if included) shall be adjacent to this space.
- Visual monitoring of the lobby is required from the office of the check-in area.

c. Size. The floor area for the lobby shall approximate 3 ft.² (.28 m²) for each occupant. At least 50 percent of the visitors in the largest spectator seating area shall be accommodated.

Table 5-3: Public Toilet Room Fixture Criteria

	Fixtures/Men	*Fixtures/Women*
Water Closet	1 / 250	1 / 150
Lavatory	1 / 200	1 / 150
Urinal	1 / 250	—
Drinking Fountain	1 / 400	1 / 400
Handicapped WC	1 min.	1 min.

d. Furnishings.
- Chairs
- Waste receptacles
- Public phones
- Tackboards

e. Materials and Finishes.
- Floor: Resilient or abrasive ceramic tile, carpet or masonry.
- Walls. Painted masonry, painted or vinyl covered gypsum board, or painted plaster.
- Ceiling. Acoustical or painted gypsum board.

15. Custodial Closets

a. Use. Custodial closets are used for the storage of cleaning and maintenance supplies for the dressing, shower and toilet areas.

b. Circulation and Adjacency. Custodial closets should be centrally located in each dressing room.

c. Size. These areas should be sized to accommodate equipment and supplies necessary for proper maintenance. Minimum size should be 4'-0" x 6'-0" (1.21 x 1.83 m).

d. Equipment and Furnishings.
- Janitor's sink or mop receptacle
- Hooks or racks for mops and brooms
- Buckets
- Shelving for storage of soap, toilet paper, sanitary napkins, paper towels, and cleaning supplies

e. Materials and Finishes.
- Floors: Concrete or ceramic tile.
- Walls: Painted masonry.
- Ceiling: Painted gypsum board.

f. Special Considerations.
- Area must be well ventilated.
- Space should be equipped with sprinklers in indoor pools.

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A. Development of Design

In addition to complying with the general criteria, the design shall provide a compatible solution for the specific project requirements. An individual design is required for the specific site that enhances the surrounding built and natural character of the base. Other factors that determine the success for the design include:

1. Value and Cost

The design must result in a complete facility that can be constructed within the project funds and be maintained economically.

2. Operating Efficiency

The individual spaces shall be thoughtfully arranged to meet the specific needs of the user population, and allow for maximum efficiency of staff utilization.

B. Project Cost

The design shall be guided by considerations that reduce project cost. The following basic decisions shall be part of the design where they result in savings in the total construction and operating costs, and where they are permitted by other project requirements.

1. Floor Area

If possible, reduce the floor area below the allowable limit by using a compact plan that minimizes floor area for circulation, walls and structure.

2. Building Massing

Structural, architectural and mechanical costs can be reduced with a compact building volume and careful placement of mechanical and filter rooms to reduce the length of "runs."

3. Simplified Construction

The following options for simplifying construction are encouraged where they are feasible:

a. Use pre-engineered building systems where they are locally available and where they can be supplied and maintained economically. This is especially true for indoor pool enclosures.

b. Use familiar building assemblies and forms that do not require a specially qualified labor force or special construction equipment for installation.

c. Use durable, water resistant materials that have a low life-cycle cost. Minimize the number of different materials used and select materials that are locally available.

4. Energy Management

For indoor pools, operating costs can be reduced by applying the principles of passive solar design, optimizing the effective use of insulation based on a life cycle study, and using fuels that can be provided economically for the life of the facility.

C. Environmental Influences

The design shall be suited for the specific climate of the base. Because the large majority of Air Force pool facilities are a combination of outdoor pools and unheated or un-air conditioned bathhouses, environmental considerations focus on the control of sunlight and wind. By shading, tunneling, blocking or otherwise manipulating these two elements, the designer can make great strides in adding to the user's comfort.

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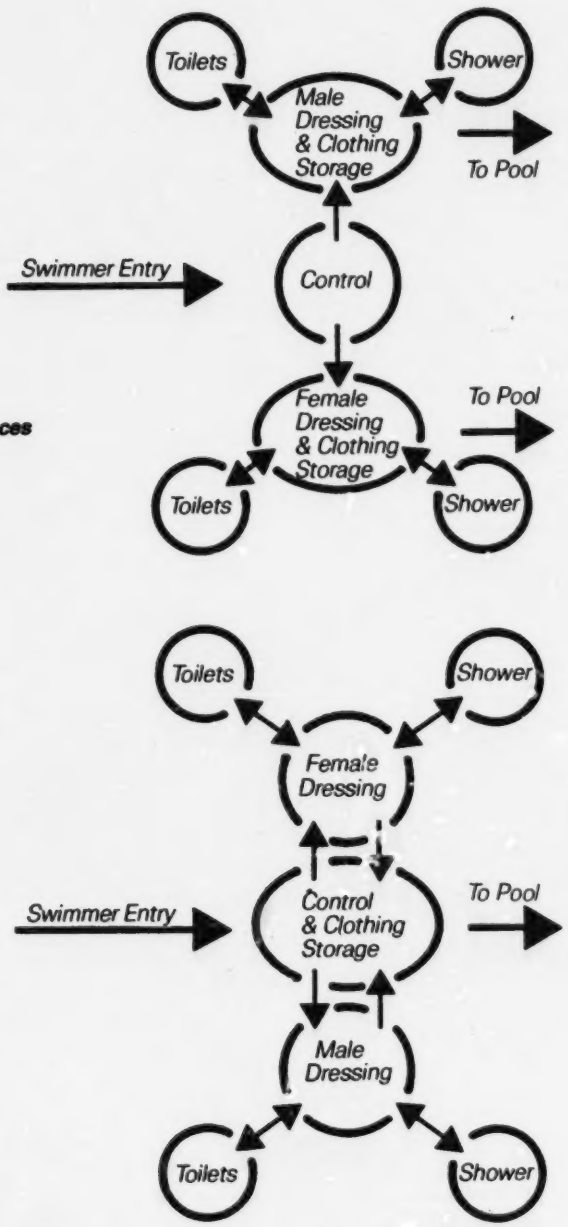

Figure 6-1:
Functional Sequences

D. Relationship of Spaces

Because there are so few functional spaces and the use of the facility is so singly directed, the relationship of spaces is quite simple. Figure 6-1 shows the optional relationships of the component spaces. The only adjustment in this figure is created by the system and location for clothing storage.

E. Illustrative Design Schemes

Each project requires a unique design tailored to the local character of the base, the site, and the needs of the user population. The following schemes are illustrations of design concepts based on the assumed conditions and requirements of a fictitious base. They are not intended as predetermined solutions, but are offered for guidance only.

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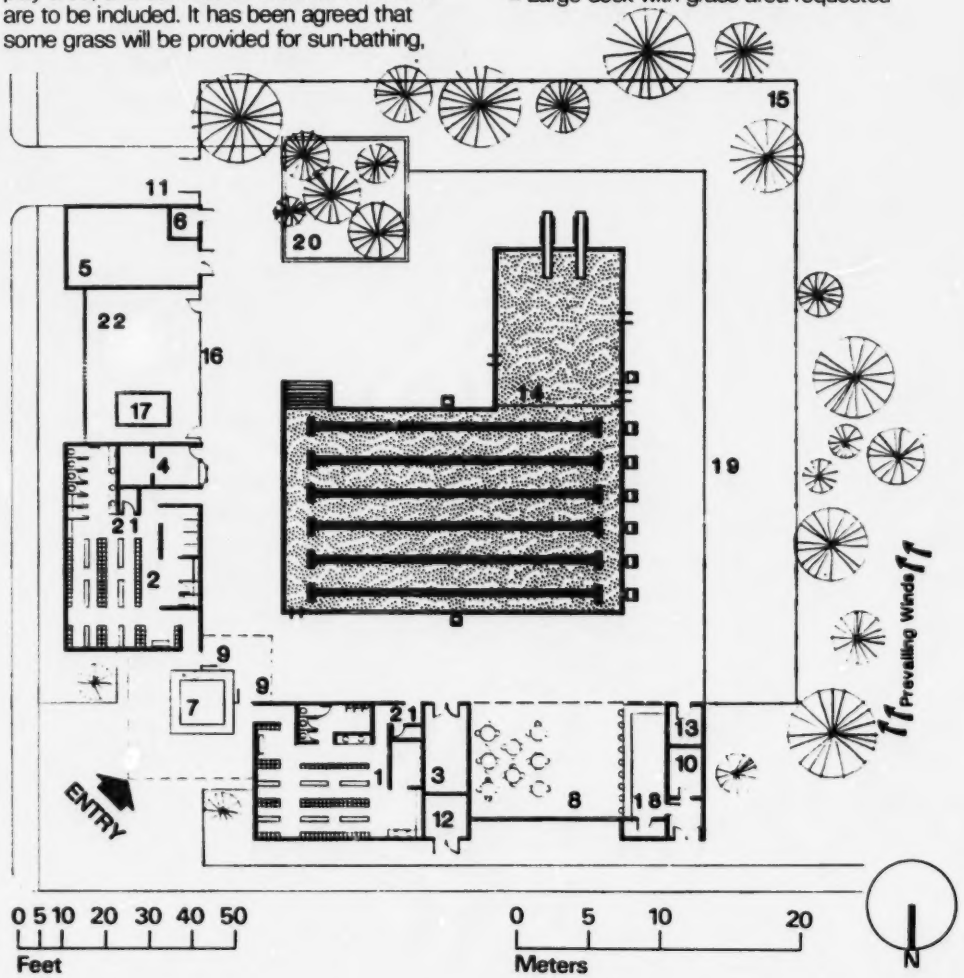
1. 25 Meter Outdoor Pool Facility

This project is to be constructed in central Texac for a base with a military strength of 1500. The site is a flat corner lot located near a large dependent housing complex. Users have requested a full complement of programs for all age groups. A community swim club atmosphere is desired. *AFM 86-2* requirements will allow a 6 lane, 25 meter pool. Pay lockers (25 cents) have been requested in the dressing area for clothing storage. The pool is to be fully equipped for competitive swimming and diving, but no formal spectator seating is envisioned. A partially shaded wading pool, tot lot play area, and concession area with snack bar are to be included. It has been agreed that some grass will be provided for sun-bathing, but some shading of the deck and grass will be provided for relief from the sun. An illustrative design for this project is shown in Figure 6-2.

Specific Program Requirements:

- Swimming Area: 25 meters long with 6 lanes
- Diving Area: one 3-meter board and one 1-meter board
- Pool Capacity: 300 people
- Male to Female Occupancy: 50/50
- Wading pool requested
- Tot lot area requested
- Snack bar with tables requested
- Large deck with grass area requested

Figure 6-2:
Illustrative Design
25m Outdoor Pool Complex



1. *Men's Dressing Room*
2. *Women's Dressing Room*
3. *Pool Equipment Storage*
4. *Office*
5. *Filter Room*
6. *Chlorine Room*
7. *Check-in*
8. *Concession Area*
9. *Gate*
10. *Food Storage*
11. *Emergency and Service Access*
12. *Maintenance Equipment*
13. *Storage*
14. *Safety Line*
15. *High Fence 8'-0"*
16. *Low Fence 3'-0" to 3'-6"*
17. *Wading Pool*
18. *Food Service*
19. *Grassed Area*
20. *Raised Planter*
21. *Janitor Closet*
22. *Tot Lot*

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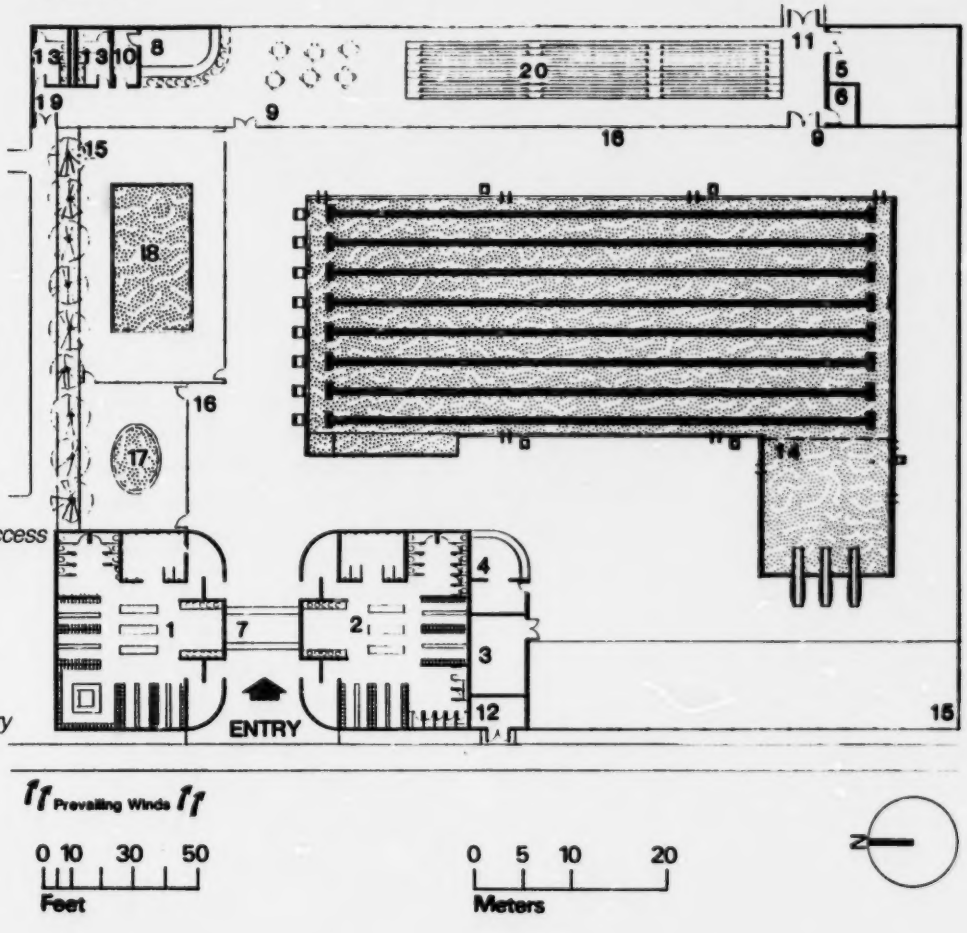
2. 50 Meter Outdoor Pool Facility

This project is to be constructed near Washington, D.C. for a base with a military strength of 4000. It is to be centrally located on the base, and will serve as the focal point for Air Force competitive swimming in the D.C. metropolitan area. Users have requested a full compliment of programs for all ages. A service hospital is located on the base and a ramp for wheelchair access into the pool proper has been requested for rehabilitation programs for the disabled. A shaded seating area for spectators is envisioned with public toilets available. Pay lockers (25 cents) have been requested in the dressing rooms for storage of clothing. An illustrative design for this project is shown in Figure 6-3.

Specific Program Requirements:
- Swimming Area: 50 meters with 8 lanes
- Diving Area: one 3-meter board and two 1-meter boards
- Pool Capacity (including training pool): 800 people
- Male to Female Occupancy: 50/50 assumed
- Wading pool requested
- Training pool requested
- Snack bar requested
- Spectator Seating: 300 people
- Spectator toilets requested
- Grassy sunbathing area requested

Figure 6-3:
Illustrative Design
50m Outdoor Pool Complex



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3. 25 Meter Indoor Pool Facility

This project is to be constructed in Greenland for a base with a military strength of 4000. The lot is flat, fairly narrow and deep and faces a series of one story structures. Due to the persistent cold weather, lap swimming for exercise is a high priority among users. A small lounge area with a view of the pool has been requested. No diving is needed. Clothing is to be stored in baskets within each dressing room.

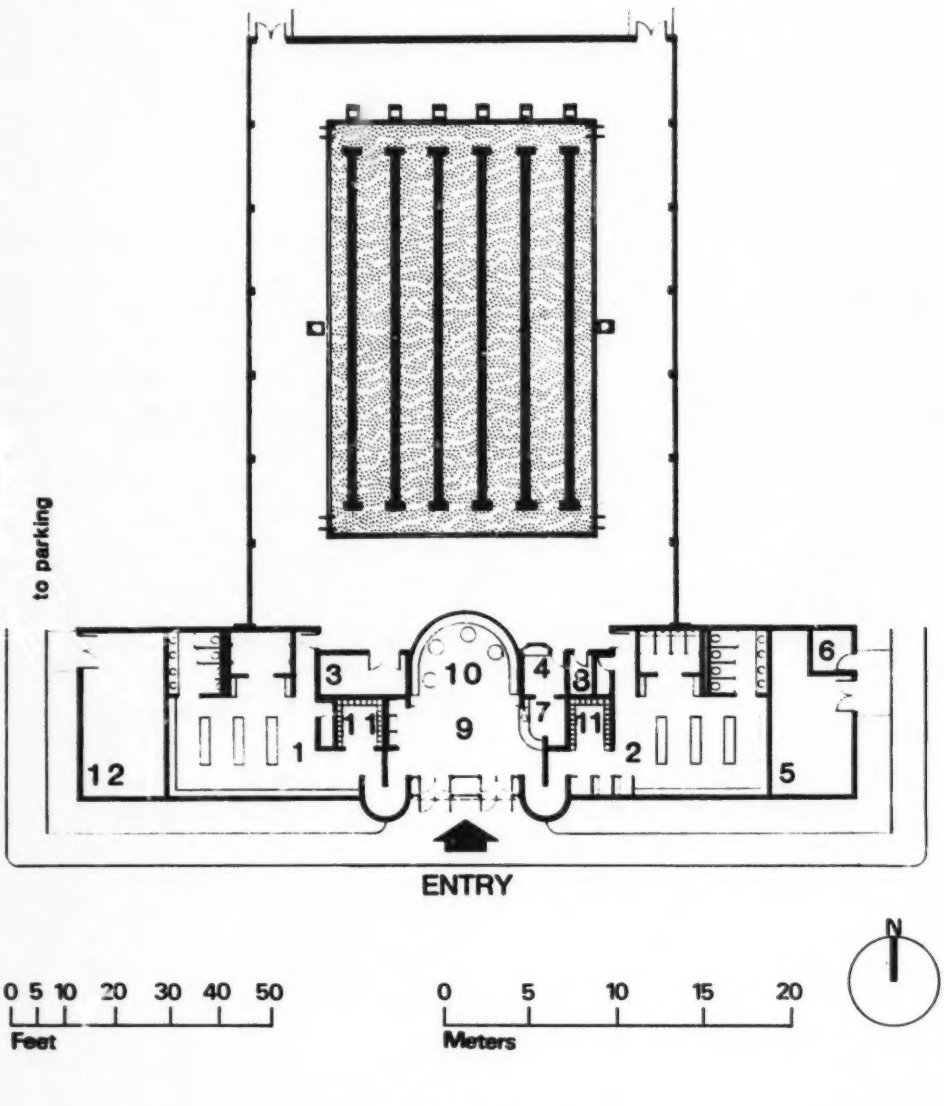
An illustrative design for this project is shown in Figure 6-4.

Specific Program Requirements:

- Swimming Area: 25 meters with 6 lanes
- Pool Capacity: 250 people
- Male to Female Occupancy: 50/50 assumed
- Vending machines requested
- Lounge with view of pool requested

Figure 6-4:
Illustrative Design
25m Indoor Pool Complex

1. *Men's Dressing Room*
2. *Women's Dressing Room*
3. *Pool Equipment Storage*
4. *Office*
5. *Filter Room*
6. *Chlorine Room*
7. *Check-in*
8. *Storage*
9. *Lobby*
10. *Lounge*
11. *Basket Room*
12. *Mechanical Room*



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4. 50 Meter Indoor Pool Facility

This project is to be constructed in Montana on a base with a military strength of 8000. The lot is fairly wide and slopes 14 to 15 feet from the front to the rear. *AFM 86-2* requirements will allow a 6-lane, 50 meter indoor pool. Lap swimming for exercise is a high user priority, but the pool will be equipped for full competition meets. The sloped site allows the filter room to be placed on a lower level (under the mechanical room) and maintain gravity return flow from the pool. Due to the small number of recreational facilities on the base, users have requested a nice lounge offering a snack bar, some tables and a view of the pool.

Clothing storage is to be handled by baskets, centrally located and maintained by the staff.

The cost of formwork required for an above grade pool allowed the use of an aluminum pool system. An illustrative design for this project is shown in Figure 6-5.

Specific Program Requirements:

- Swimming Area: 50 meters with 6 lanes
- Diving Area: two 1-meter boards
- Pool Capacity: 500 people
- Male to Female Occupancy: 50/50 assumed
- Lounge with snack bar and tables requested

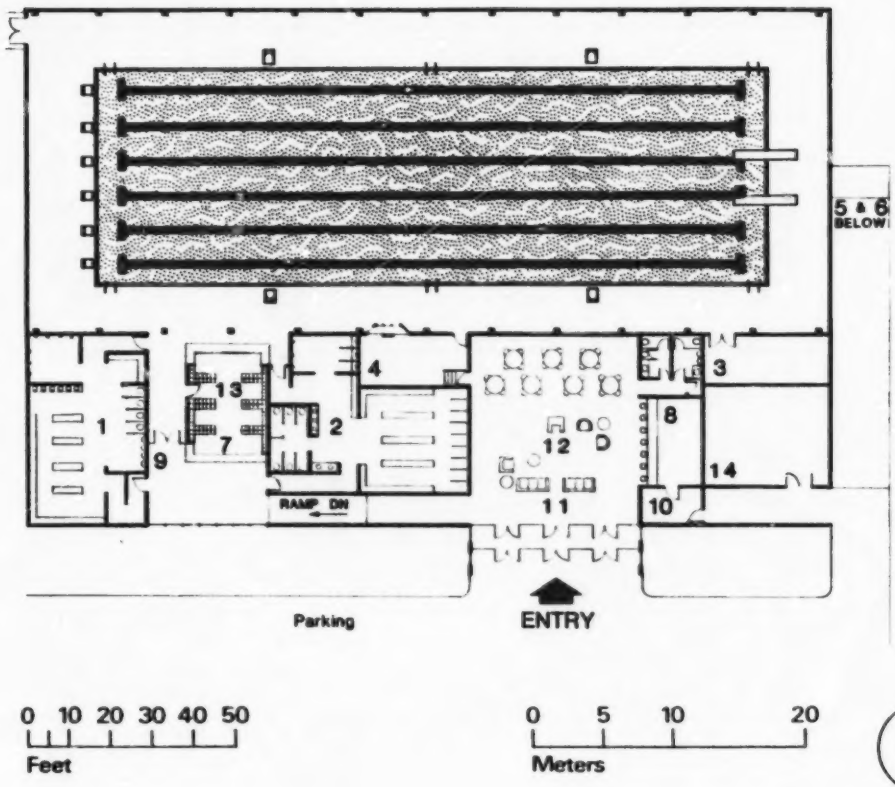

Figure 6-5:
Illustrative Design
50m Indoor Pool Complex

1. *Men's Dressing Room*
2. *Women's Dressing Room*
3. *Pool Equipment Storage*
4. *Office*
5. *Filter Room*
6. *Chlorine Room*
7. *Check-in*
8. *Concession Area*
9. *Gate*
10. *Food Storage*
11. *Lobby*
12. *Lounge*
13. *Basket Room*
14. *Mechanical Room*

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Table 7-1:
Site Standards

	Technical Documents
1. General	
a. Clearances, Restrictions & Setbacks	AFM 86-8 & AFM 88-15, Ch. 13
b. Fire Separations Required	AFM 88-15, Ch. 13
2. Climate and Topography	
a. Meteorological Data	AFM 88-29
b. Grading, Drainage & Erosion Controls	AFM 88-15, Ch. 15 & 18
3. Utilities	
a. Water, Gas, Electrical & Heating Supply	AFM 88-15, Ch. 1, 7, 8, 10 & 12
b. Telephone & Other Communication Systems	AFM 88-15, Ch. 7
c. Sanitary & Storm Sewers	AFM 88-11, Vol. I & AFM 88-15, Ch. II
4. Landscaping	
a. Sprinkler or Irrigation Systems	AFM 88-15, Ch. 18
b. Ground Cover & Planting	AFM 86-6, AFM 86-9, AFM 88-15, Ch. 18 & AFM 88-17, Ch. 1, 2, 3 & 4
5. Site Accessories	
a. Exterior Lighting (Street, Flood & Security)	AFM 88-15, Ch. 8
b. Signage	AFM 88-40
c. Fencing & Walls	AFM 88-15, Ch. 3
d. Pedestrian & Vehicular Circulation	AFM 88-6, Ch. 2 & 3 & AFM 88-15, Ch. 15

Table 7-2:
Architectural and
Structural Standards

1. General	
a. Handicapped Accessibility Design Features	AFM 88-4, Ch. 8 & ANSI A117.1
b. Seismic Zone, Wind & Snow Load Design Criteria	AFM 88-3, Ch. 1 & 3
2. Structural	
a. Design Loads	AFM 88-3, Ch. 1 & 3
b. Foundation Systems & Their Design	AFM 88-3, Ch. 1 & 3
c. Structural Elements	AFM 88-15, Ch. 3
d. Special Conditions	AFM 88-15, Ch. 3
3. Architectural	
a. U Values & Vapor Barriers	AFM 88-15, Ch. 3
b. Sound Attenuation Requirements	AFM 88-15, Ch. 3
c. Special Finishes & Material Standards	AFM 88-15, Ch. 3
d. Special Building Elements & Criteria †	AFM 88-15, Ch. 3
e. Construction Systems & Materials	AFM 88-15, Ch. 3 & AFP 88-41
f. Signage	AFP 88-40

†For roofing, loading docks, etc.

ANSI-American National Standards Institute

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Table 7-3:
Fire Protection Standards

	Technical Documents
1. General	
a. Classification of Occupancy & Hazards of Contents	NFPA 101, Ch. 4
b. Type of Building Construction	AFM 88-15, Ch. 2 & 13
c. Fire Area Limitations	UBC, Ch. 5
d. Fire Protection Features†	AFM 88-15, Ch. 13 & NFPA 101, Ch. 6
2. Exit Requirements	
a. Types & Identification of Exits	NFPA 101, Ch. 5
b. Capacity, Number & Arrangements of Exits	NFPA 101, Ch. 5
c. Emergency Lighting & Power Sources	AFM 88-15, Ch. 13
3. Fire Protection Systems	NFPA 101, Ch. 5 & AFM 88-15, Ch. 13
4. Interior Finishes	
a. Flame Spread & Smoke Development Ratings	AFM 88-15, Ch. 13
b. Carpet & Rug Flammable Standards	AFM 88-15, Ch. 13
5. Utilities & Building Services	
a. Electrical Wiring	NFPA 70
b. Air Conditioning, Heating & Ventilation	NFPA 90 A & B
c. Gas & Related Gas Piping	NFPA 54
d. Storage of Oxidizing Materials & Chlorine for Pools	NFPA 43 A & 43 C

†*Fire Walls, Fire Partitions & Smoke Barriers*

Table 7-4:
Mechanical Standards

1. Plumbing	
a. Water Supply	AFM 88-15, Ch. 10
b. Piping and Fixtures	AFM 88-8, Ch. 4 & AFM 88-15, Ch. 4
2. Heating	
a. General Policies	AFM 88-15, Ch. 5
b. Equipment Standards	AFM 88-15, Ch. 5
c. Temperature & Controls	ASHRAE Guide, ASME Code, NFPA 31, 54, 58, 86 A & 409
3. Ventilation, Air-Conditioning & Evap.Cooling	AFM 88-15, Ch. 6, ASHRAE Guide, ASME Code

Table 7-5:
Electrical Standards

1. Power†	AFM 88-15, Ch. 7 & NEC
2. Electrical Features & Equipment	
a. Interior & Exterior Lighting††	AFM 88-15, Ch. 7 & IES Handbook
b. Outlets, Receptacles, Switches & Grounds	AFM 88-15, Ch. 7 & NEC
c. Emergency Lighting	NFPA 101, Ch. 5
d. Telephones & Other Communication Systems	AFM 88-15, Ch. 7

†*Service, Distribution Systems & Standby Requirements*
††*Types & Intensities*

Table 7-6:
Environmental Standards

1. Quality Standards & Criteria†	AFM 88-15, Ch. 11 & AFR 19-1
2. Disposal Methods††	AFM 88-11, Ch. 5 & AFM 88-15, Ch. 11

†*Air, Noise & Waste*
††*Waste Water & Solid Waste*

ASHRAE-American Society of Heating, Refrigerating, & Air Conditioning Engineers
ASME-American Soc. of Mechanical Engineers
NEC-National Electrical Code of the NFPA
NFPA-National Fire Protection Association
IES-Illuminating Engineering Society

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BY ORDER OF THE SECRETARY OF THE AIR FORCE

OFFICIAL

CHARLES A. GABRIEL, General, USAF
Chief of Staff

JAMES H. DELANEY, Colonel, USAF
Director of Administration

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